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The fair–minded rich and healthy?

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Abstract

Do rising inequality and youth unemployment affect preferences for redistribution? Using country-level European survey data from 2002 to 2015, I show that changes in market inequality and the rise of (youth) unemployment increase preferences for redistribution. The findings are supported by the respondents' fairness concerns. Estimated effects exhibit substantial heterogeneity. There is systematic variation among fairness concerns with respect to income and health, which are triggered by market income inequality and (youth) unemployment. The preferences of the relatively rich and healthy are more responsive to the level of inequality and youth unemployment. At very high youth unemployment rates, even the rich might be in favor of redistribution. Results suggest that "income– and health– dependent fairness concerns" exist.

Keywords: Preferences for redistribution, Inequality, Fairness concerns, Income–dependent altruism, Health–dependent-altruism, Youth unemployment, unemployment, Meltzer-Richards, Inequality, Market inequality

JEL codes: A13, D10, D31, D63, H23, C3

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1 Introduction

Nearly all countries in the world are experiencing an increase in top income and wealth shares (Alvaredo et al., 2017) and inequality is at the forefront of the political discourse. At the same time, global youth unemployment is on the rise (International Labour Office, 2016). Governmental redistribution is one way of addressing the widening income gap and helping the unemployed. However, redistribution implies higher taxation, which can hamper economic growth (see, e.g., Alesina and Perotti, 1996; Saint Paul and Verdier, 1996; Okun, 2015). Consequently, there will be net payers, and it is not clear that societies will agree on more redistribution in response to widening inequality and (youth) unemployment.

The traditional starting point for investigating preferences for redistribution is the Meltzer and Richard (1981) (MR) model. According to the MR model, individuals are self-interested and only care about their own welfare. The MR model predicts that the poor (relative to the mean income group) are in favor of redistribution, while the rich reject it, i.e. redistribution wins in a majority vote if the median household has income below the mean. This is the so-called "income-effect". Hence, if the majority of the electorate receives a below-average income, the demand for redistribution increases as market inequality rises. If market inequality rises as the rich become richer, this leads to more support for redistributive policies. Empirical evidence focusing on income inequality and size of the government is mixed[1] and there are other arguments, such as fairness concerns, implying that as inequality and potentially youth unemployment increase, even the rich could favor redistribution (see, e.g., Tyran and Sausgruber, 2006).

The goal of this paper is to investigate the effect of an increase in inequality and (youth) unemployment on preferences for redistribution in different income and health groups, using data from the vast European Social Survey (2016), 2002 - 2015, combined with European macro-level variables (World Bank, 2015; Eurostat, 2017; OECD, 2017; Solt, 2019; World Inequality Database, 2019).

Deviations from self-interested behavior and the existence of fairness concerns are well established

[1] See Dotti (2020) for a detailed overview of the empirical literature. The empirical evidence does depend on the type of redistribution (in-cash such as progressivity of the tax system and the amount of transfers) vs. in-kind policies such as public good provision and services. A further overview is giyen by Houle (2017).

(see Fehr and Schmidt (2003) for an excellent overview). Theory (Galasso, 2003; Alesina and Angeletos, 2005; Alesina and Giuliano, 2011b), experiments (e.g. Ackert et al., 2007; Hoechtl et al., 2012; Klor and Shayo, 2010; Durante et al., 2014) and empirical evidence based on survey data (Fong, 2001; Alesina and Ferrara, 2005; Alesina and Angeletos, 2005; Giuliano and Spilimbergo, 2014) propagate evidence for fairness concerns leading to a demand for redistribution. Theory predicts that if people have fairness concerns, they choose higher tax rates than voters who are purely egocentric (see, e.g., Tyran and Sausgruber, 2006; Galasso, 2003; Murray et al., 2018). Alesina and Angeletos (2005) model social beliefs about the fairness of social competition (inequality in opportunities) together with monetary incentives, which determine preferences for redistribution. If pure luck is the reason why some have a higher or lower position on the income ladder, fairness concerns matter. If however, lower income is attributed to low effort, there are no fairness concerns.[2]

The empirical literature using survey data, confirms that there are fairness concerns in broader terms (e.g. being leftist, equity principles) in preferences for redistribution (Fong, 2001; Alesina and Ferrara, 2005; Alesina and Angeletos, 2005)[3] and fairness concerns related to macro-inequality in the economy (Dimick et al., 2016; Roth and Wohlfart, 2018).[4] In addition to inequality, social issues such as growing (youth) unemployment might trigger fairness concerns which are relevant in relation to preference for redistribution. Fairness concerns towards the unemployed youth might be higher than fairness concerns towards the unemployed in general, as youth unemployment is beyond individual control and generally not a lack of effort to find a job.[5] This establishes the first hypothesis: changes in

[2]Similarly, Tyran and Sausgruber (2006) show that fairness preferences induces inequality avers rich voters to vote against material self-interest which induces redistribution (i.e. the acceptance of a redistribution referendum) if the rich are in majority. Closely related to Alesina and Angeletos (2005) is Galasso (2003) who extends the MR model based on Fehr and Schmidt (1999) and includes a fraction of "fair-minded" voters. These fair-minded individuals do not only care about their own well-being but also about society, here, the degree of equity in the economy. In contrast to the MR model, individuals with income above the mean may vote in favor of some redistribution, if they have sufficient fairness concerns. Fehr and Schmidt (1999) describes "reference-dependent inequity aversion". The utility of an individual does not only depend on his own income, but also on the allocation of resources within his reference group. One key implication is advantageous inequality aversion (loss because others are worse-off) and disadvantageous inequality aversion (the loss to poorer-than-average because others are better-off).

[3] Fong (2001) differentiates self-interest from social preferences and examines the characteristics of redistributive preferences in the U.S.. She finds that people in general hold strong principles of equity. Alesina and Ferrara (2005), Alesina and Angeletos (2005) and Giuliano and Spilimbergo (2014) complement this finding and show that fairness concerns are based on the belief that luck determines income and one's position on the social ladder, which in turn has a strong and significant effect on the probability of being leftist (Alesina and Ferrara, 2005) as well as preferences for redistribution (Alesina and Angeletos, 2005; Giuliano and Spilimbergo, 2014).

[4] This strand of literature is closely related to "Happiness research" measuring the relation of income inequality on subjective well-being. See Clark and D'Ambrosio (2015) for a comprehensive overview.

[5]This builds on Alesina and Angeletos (2005) who claim that fairness concerns matter only in preferences for redistribution when social competition is perceived as unfair.

aggregated inequality and (youth) unemployment lead to a higher demand for redistribution *(H1)*.[6] It is, however, not clear which type of inequality matters (e.g. income, consumption or wealth inequality, measured by net vs. market Gini or Top 1% income and wealth concentration) and how different measures are associated with preferences for redistribution, which I study in this paper.

Using a country, region and year fixed effects model, results show that market inequality is associated with higher preferences for redistribution. In line with MR, I find that the higher pre-tax and pre-redistribution inequality is, the higher is the demand for redistribution. However net income inequality and Top 1% income concentration do not affect preferences for redistribution. This indicates that respondents are for redistribution in absolute terms.[7] In addition, not only market inequality increase the demand for redistribution, but also youth unemployment *(H1)*. The data further allows me furthermore to identify a very clear pattern of the self-interest-driven income-effect as predicted by the MR model. I find that the poor (relative to the mean income), are in favor of redistribution and the rich oppose it.

Second, the average effect of fairness concerns in voting for redistribution may obscures relevant heterogeneity. I argue that fairness concerns are state dependent, varying with income *(H2)* and health *(H3)*. Health (income) state dependence can be defined as the effect of health (income) on the marginal utility of a constant amount of consumption (see, Finkelstein et al., 2009). Experimental and empirical evidence shows that fairness concerns vary with income (Hoechtl et al., 2012; Dimick et al., 2016).[8] People have decreasing marginal utility in income which implies that increase in macro-inequality will lead to a larger increase in support for redistribution from the fair-minded millionaire than from the poor. An increase in redistribution to reduce inequality is less costly to a richer person

[6] Thereby, controlling for personal employment status and the insurance motive. The insurance motive represents the possibility of increasing demand for the insurance of individuals due to lower expected income with increasing financial risk or uncertainty.

[7] The question forming the dependent variable is quite vague. In particular, it is not clear whether it is meant as a general or a marginal statement about redistribution. These two interpretations are quite different, but unfortunately, there is no way of knowing which interpretation an individual respondent had in mind. The interpretation has implications for the appropriate measure for inequality. I argue that the market Gini is the relevant measure in the general interpretation, whereas in the marginal interpretation, it is the net Gini that should matter.

[8] Hoechtl et al. (2012) demonstrate experimentally that fairness concerns increase with income level, i.e. the rich are more responsive to changes in inequality than the poor. Hoechtl et al. (2012) experimentally analyze conditions under which fairness concerns influence one's preferences towards redistribution. They show that an asymmetry exists in voting for redistribution with respect to income classes, i.e. there are higher fairness concerns if there is a rich majority.

than to a poorer person.[9] I examine whether fairness concerns in preferences for redistribution in Europe vary systematically with income level *(H2)*.

Furthermore, health status can affects the form of utility functions such that severe health impacts hinder individuals ability to derive utility from additional consumption (see Viscusi (2019) for an up-to-date overview).[10] Finkelstein et al. (2009, 2013) demonstrate empirically that individual utility between healthy and sick states of the world varies indeed with consumption. With respect to preference for redistribution, this could lower the ability to derive utility from fairness. Although I assume that a poor health condition leads to favoring redistribution due to stronger insurance motives against potential lower income, I expect that utility from fairness decreases with poor health and increase with a good health, which in turn affects preferences for redistribution establishing *H3*. The intuition of hypothesis *H3* is the following: Being ill, one worries more about one's own situation and has less room to care about others (regardless of any monetary losses that can occur). However, when completely healthy (controlling for income), there is no need to worry about one's own health. Instead, one has the capacity to focus on social problems and care about society because of fairness concerns. To the best of my knowledge, no previous study has investigated whether the health condition has an effect on fairness and preferences for redistribution.

I find that a positive subjective health decreases the demand for redistribution, while the contrary is true for individuals who are in a bad health state. Concentrating on fairness concerns towards inequality in society and the unemployed youth, I find relevant heterogeneity with respect to income and health, confirming *(H2)* and *(H3)*. If societies experience rising market inequality and growing (youth) unemployment, the rich become more concerned with income differences and the unemployed (youth) such that their strong opposition is weakened. The effect of an increase in market inequality and both, unemployment and youth unemployment is positive for the rich *(H2)*, and, at very high

[9] To illustrate, suppose person A has income X, and another person B has income $Y > X$. If inequality increases, then the desire for redistribution by person B increases by more than the desire of person A. Of course, with increased inequality, there would be more people that have income of less than X, and/or more people that have more than Y. However, the income of the people who have been compared does not change.

[10] One exemplary argument is the standard utility function of a risk-averse individual, which increases with wealth, but at a diminishing rate. If death is treated equally to a drop in income, then death boosts the marginal utility of income, which is unreasonable. Viscusi and Evans (1990) stress the fallacy of not differentiating between health problems (and death) and monetary loss, and therefore proclaim a health-dependent utility function.

levels of youth unemployment, even the rich are in favor of redistribution. The very poor increase the demand for redistribution when market inequality rises, as this potentially reinforces the weak financial situation of the poor. Fairness concerns do not only dependent on the level of income but also on the individual's health *(H3)*. Increases in market inequality and youth unemployment increase preferences for redistribution of individuals in a good health state.

A further validation gives the additional measure for fairness concerns i.e. the general interest in "helping others". Results also shows systematic heterogeneity with respect to income and health. They are higher for the rich than for the poor, and fairness concerns of the healthy are significantly higher than fairness concerns of the sick. The results jointly support the existence of "income– and health–dependent fairness concerns".

In addition, I expect that having children might influence preferences for redistribution positively as there are higher monetary requirements, such as higher food expenditures or educational expenditures (see Browning (1992) for a discussion). I find that the effect of having children is positive for net receivers and insignificant for net payers.

These findings contribute to the broad literature on preferences for redistribution (see Alesina and Giuliano (2011b) for an overview). The traditional MR model has been challenged by a number of theoretical and empirical works for multiple reasons. If one argues that individuals are guided purely by self-interest, the main critique is that the MR model does not take into account factors such as social mobility (Piketty, 1995; Alesina et al., 2018; Benabou and Ok, 2001), social competition (Corneo and Gruener, 2000; Gallice and Grillo, 2018), individual occupational status (Guillaud, 2013), institutions (Alesina and Fuchs-Schndeln, 2007) and culture (Alesina et al., 2004; Luttmer and Singhal, 2011). In particular, this research adds to the empirical literature investigating the effects of inequality on the demand for redistribution (Pittau et al., 2013; Kerr, 2014; Kuziemko et al., 2015; Dimick et al., 2016; Roth and Wohlfart, 2018). Pittau et al. (2013) show that the more unequal the income distribution (net Gini), the lower the preferences for redistribution in the U.S. for the period of 1980 - 1990. Kerr (2014) demonstrates for the U.S. that changes in inequality (net Gini) have a positive effect on the demand for redistribution. Kuziemko et al. (2015) provide U.S. individuals with different information treatments

(income distribution, shocks to the income distribution and top income taxes) and investigates how the preferences for redistribution changes when survey participants receive information about income inequality. It turns out that the demand for redistribution among participants is mostly inelastic. Roth and Wohlfart (2018) examine whether the experienced level of income inequality in their home country (average level of income inequality (top 5% earners) of respondents while they were between 18 - 25 years old) affects preferences for redistribution in Europe and the U.S.. They find that higher experienced inequality during life leads to less preferences for redistribution.[11] Results are inconclusive and mostly focuses on the U.S. and on (experienced) income inequality. This paper is most closely related to Dimick et al. (2016), concentrating on "income-dependent-altruism" in the U.S., where inequality is measured by the "Atkinson index". However, there exist substantial differences between Europeans and U.S. Americans concerning preferences for redistribution (Alesina et al., 2004). While Dimick et al. (2016) focus on the U.S. and find support for income-dependent altruism, I concentrate on Europe (controlling for year, country and region fixed effects) and ask whether changes in (youth) unemployment and different facets of inequality (market and net Gini, Top 1% income and wealth concentration) might trigger income– as well as health– dependent fairness concerns.

The structure of the paper is as follows: Section 2 describes the data and explains the estimation strategy. Section 3 describes and analyzes the results and confirms the robustness, and Section 4 concludes the paper.

2 Data and estimation strategy

In this section, I present the data before I describe the empirical strategy.

2.1 Data

The base of the underlying empirical strategy is a merger of the European Social Survey (ESS) data (European Social Survey, 2016) and annual country-level measures from (World Bank, 2015), Eurostat (Eurostat, 2017), OECD (OECD, 2017), World Inequality Database (2019), Bundesamt fuer

[11] They argue that this effect operates through the respondents sense of fairness, i.e. they do not consider the prevailing inequality level as unfair as the experience with inequality changes the respondent's feeling of what is fair and unfair.

Statistik Schweiz (2019) and the Standardized World Income Inequality Database (SWIID) (Solt, 2019). The ESS offers the possibility of analyzing attitude developments in Europe over time. The comparative longitudinal survey is conducted biannually across Europe, monitoring public opinions within a dynamic context. In this paper, I use seven ESS rounds covering the period from 2002 to 2015. The data set is time-series cross-sectional (TSCS), with different individuals sampled every period.[12] The initial sample consists of 331,871 observations for individuals covering 1,218 variables with country-year points for 32 countries.[13] The cumulative data set is merged with contextual macro-data. Table 1 provides an overview of all variables used, including the data source and description of creation.

Dependent variable

The dependent variable to measure preferences for redistribution is commonly used in the literature and constructed from the question[14]:

> "To what extent do you agree or disagree with the statement? The government should take measures to reduce differences in income levels."

The possible answers are available on a five-point scale ranging from strong agreement to strong disagreement.[15] The variable is re-scaled in ascending order. The question only gives limited insights into the level of public support for redistribution, as it does not reflect the willingness to actually pay for it nor does it specify the type of redistribution (in-cash vs. in-kind) which is relevant (see, Dotti, 2020).

It is similarly not clear whether respondents understand the question in an absolute or marginal sense, i.e. that it expresses preferences for redistribution or preferences for more redistribution than it is currently the case. Figure 1 plots mean preferences for redistribution (x-axis) against average

[12]Thus, individual-specific autocorrelation is not present as observations are randomly drawn within a country.

[13]To be precise: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Great Britain, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Russia, Republic of Slovakia , Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine.

[14] The same question is used by Corneo and Gruener (2002); Alesina and Ferrara (2005); Alesina and Angeletos (2005); Alesina and Giuliano (2011a); Luttmer and Singhal (2011); Yamamura (2012); Pittau et al. (2013); Guillaud (2013); Kerr (2014); Dimick et al. (2016) to measure redistributive preferences although from different data sources

[15]Answers "don't know/don't want" are excluded from the analysis.

Table 1: Variable description

Variable name	Survey question / Variable	Description
Preference for redistribution	Agreement: Government should reduce differences in income levels	Indicator variable: Rescaled in ascending order (1 disagree - 5 agree strongly)
Demographics:		
Age	Calculated age of respondent	Calculated age of respondent
Female	Gender	Dummy: Female = 1, Male = 0
Household size	People living in same household	Log of size
Income	Household's total net income, all sources	Imputed, two different variables merged
Married	Legal status	Dummy: Yes = 1
Divorced or separated	Legal status	Dummy: Yes = 1
Widowed	Legal status	Dummy: Yes = 1
Never married	Legal status	Dummy: Yes = 1
Education	Highest level of education, ES - ISCED	Indicator variable: 0 no eductaon, 1 Primary education, 2 secondary education, 3 Tertiary education
Social mobility	Father's highest level of education, ES - ISCED	Dummy: Comparing fathers level of education with own level of education, 1 if higher, 0 otherwise
Unemployed	Any period of unemployment and work seeking lasted 12 months or more	Dummy: Yes = 1
Has a child in the household	Ever had children living in household	Dummy: Yes = 1
Discrimination	Member of a group discriminated against in this country	Dummy: Yes = 1
Paid work last week	Respondent has worked last week	Dummy: Yes = 1
Metro	Lives in metropolitan area	Dummy: Yes = 1
Born in an Eastern Bloc country		Dummy: Yes = 1
Occupational status	Different types of occupation classified by isco08 e.g. Technicians, Management, Agriculture etc.	
Current main activity	Different types of main activity e.g. education, retirement etc.	
Risk aversion:		
Self-employment	Employment relation	Dummy: Being self-employed =1
Adventurous	Important to seek adventures and have an exciting life	Dummy: 1 if yes, very much like me and like me
Political orientation:		
Left	Placement on left right scale (left 1-10 right)	Dummy: 1 if placement 1 -4 on the left scale
Religion	Type of religion; catholic, protestian, orthodox, jewish etc.	Dummy: Self declared religiousity (1 not at all - 10 very religious); use 6 - 10
Union current and ever	Member of trade union or similar organisation	Dummy: Yes = 1 if yes, currently and yes, previously
Trust legal system	Trust in the legal system (0 - 10 complete trust)	Dummy: Yes = 1 (7 - 10)
Trust parliament	Trust in country's parliament (0 - 10 complete trust)	Dummy: Yes = 1 (7 - 10)
Country level factors:		
Crime rate (murder)	Total intentional homicides per year	Eurostat
GDP	*Gross domestic product at market prices, per capita*	*Eurostat, OECD*
Unemployment	Percentage of unemployed from working population	Eurostat, OECD
Youth unemployment	Percentage of unemployed youth from working population	Eurostat, OECD
Top 1 \% wealth shares		
Top 1 \% income shares		
Welfare state classification	Country number	Indicator variable: 1 "Nordic" 2 "Liberal" 3 "Continental" 4 "Southern" 5 "Eastern and Central"
Net Gini	Gini coefficient of equivalised disposable income	The Standardized World Income Inequality Database
Mkt. Gini	Market Gini	The Standardized World Income Inequality Database

Note: The table presents construction of variables used in the estimation and the respective sources.

relative redistribution (y-axis) per country and indicates that Denmark and Netherlands with high levels of relative redistribution[16] have the lowest preferences for redistribution. But this pattern is not true per se: Sweden and Finland have high levels of relative redistribution but not exceptional low preferences for redistribution. Whether the understanding is marginal or absolute is probably mixed: some understand the question in a marginal sense, whereas others interpret it in absolute terms. The interpretation may only be different for the voter at the margin (i.e. when the answer changes from yes to no absolute terms). This argument is based on the MR model: Everyone below the median income will be in favor of redistribution in general (they are recipients), but also in favor of more redistribution (the extent of which is determined by the median voter). People below the median income are both in favor of redistribution and in favor of *more* redistribution (as they are inframarginal).And everyone above the median income will be against redistribution, both in general and on the margin. The median voter would answer "yes" to the general redistribution question (because the median income is below the mean income, making the median voter a net recipient), but "no" to the marginal question as the extent of redistribution exactly corresponds to his or her preferences. If the interpretation is marginal, then finding support for *H2* could simply mean that the marginal utility of income decreases in income.

There are pitfalls which come with the question. Nonetheless, it is the best available to measure preferences for redistribution (see Nekby and Pettersson-Lidbom (2017) for further discussion on the reliability of survey measures for preferences for redistribution)[17].

Measuring fairness concerns

Following Dimick et al. (2016) and Roth and Wohlfart (2018), I examine whether fairness concerns in preference for redistribution are triggered by rising macro-inequality. In addition, I hypothesize that fairness concerns in preference for redistribution are related to (youth) unemployment in the economy.

Distinct metrics of economic disparity exist, i.e. income, consumption and wealth inequality. It is not clear a prior which type of inequality matters in preference for redistribution. Among the most

[16]Estimated relative redistribution is the %age reduction in market-income inequality due to taxes and transfers.

[17]Unfortunately, there are no additional variables available in the ESS cumulative data set to further specify different dimensions of preferences for redistribution as suggested by Nekby and Pettersson-Lidbom (2017)

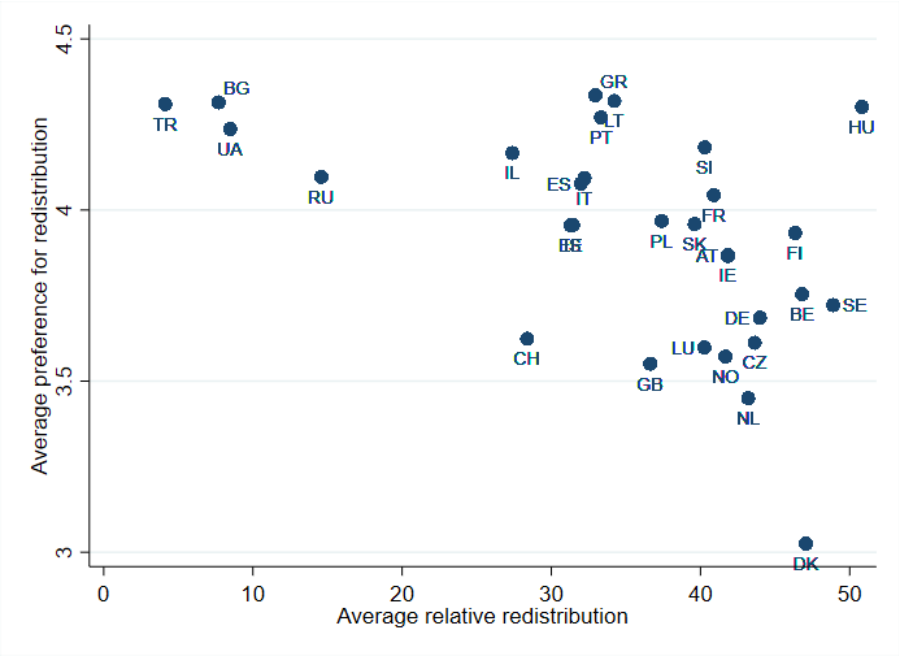


Figure 1: Preferences for redistribution and relative redistribution. Note: The graph plots mean preferences for redistribution constructed from the ESS data set by country 2000 - 2017 (y- axis) against mean relative redistribution 2002 - 2015 per country from the SWIID database (Solt, 2019) (x-axis).

poupular are the two different Gini indices, one with net (post-tax, post-transfer) income inequality and one with market (pre-tax, pre-transfer) income inequality. The two indices are related in the following way: Redistributive fiscal policies reduce net income inequality, given market inequality. The measure of inequality which I include in order to test for hypothesis *H1* - *H3*, is the net Gini and market Gini of the latest version of the Standardized World Income Inequality Database (SWIID) (Solt, 2019). Pensions, public social benefits such as unemployment and family benefits are classified as a government transfer in the SWIID.

Potentially, it matters how inequality enters the model and can provide information on how the dependent variable survey question is understood. If the net Gini index is relevant, this could indicate a preference for more redistribution whereas a significant market Gini might reflect preference for redistribution in an absolute sense. But in addition, the market Gini potentially plays a role when paid wages are very present as an orientation devise and people perceive a large discrepancy with respect to wages. However, market inequality also contains some governmental interventions such as public pension programs, job training programs, public education etc. This means for example that market inequality is exaggerated in a setting where public pensions are high, as they do not count as

income. It is inequality in incomes after taxes and benefits that conveys differences in living standards and the net Gini might be important if respondents care about the total disposable income available for consumption.

Further measures for inequality which I include are the Top 1% market income shares and Top 1% wealth shares, which inform us adequately on the income and wealth levels of the richest individuals. To complement the analysis, I use income and wealth shares from (World Inequality Database, 2019). The WID.world combines national accounts and survey data with fiscal data sources (see Alvaredo et al. (2017) for a discussion). For the Top 1% income shares, there is no data available for Israel, Russia and the Ukraine and there are no post-tax indicators. Top 1% wealth shares are only available for France, Russia and Great Britain.

Furthermore, I include the overall unemployment rates as well as the youth unemployment rate from OECD (2017) and Eurostat (2017).

In addition, I include a dummy variable, recording the answer if respondents do voluntary work. Unfortunately, a variable measuring private donations to charity is not available in the ESS data. I assume that doing voluntary work measures a "warm-glow-motive." Andreoni (1989) argues that rich people do not only derive utility from the poor being better off (pure altruism), but also from the satisfaction derived from giving money to the poor ("warm-glow"), which is called "impure altruism". Pure altruism has often been rejected as an explanation for donations to private charities, for instance (Andreoni, 1988). However, with respect to redistribution, if the "warm-glow-of-giving" is relevant, people would presumably not want the government to redistribute, because this would diminish their own "warm-glow". If richer and healthier individuals are mainly interested in the warm-glow-of-giving, I should find very little support for government redistribution. Under pure altruism, the rich and healthy only care about the outcome (the poor having more money), but for them it is better if another rich person makes the transfer. This leads to free-riding in the sense that the rich all want transfers to happen, but they don't want to be the ones making these transfers. In attempt to overcome the problem of free-riding, I argue that if the rich and healthy are in favor of a redistribution by the state, in case inequality or (youth) unemployment rises, this is evidence for pure altruism. I test

this argument by investigating the effect of doing voluntary work proxying the "warm-glow" and the general interest in "caring about others", which I interpret as fairness concerns. The variable "helping others" is a dummy variable equal to 1, if the respondent indicates a general interest in helping others. I assume that the question is understood such that it does not matter who helps. Consequently, the variable reflects fairness concerns such that I expect a positive effect.

Health, income and having children

The income variable was recorded in two distinct specifications within the cumulative ESS data. In rounds 1-3, available response options for the income deciles were identical for every country, i.e. with the same ranges expressed in euros or the equivalent in local currency. As of ESS round 4, a country–specific decile approach was applied. Since then, categories of the income variable are national and based on deciles of the actual household income range in the given country. This change makes it difficult to use all five rounds for an analysis using an income variable. Merging the two distinct variables would cause a bias. To test for *H1* and *H2*, the income variable has to be constructed. I use the midpoint of each income bracket as a proxy of family income and a random sorting by a two-stage procedure for the re-allocation to deciles (equivalent decile groups for rounds 1-4) which categorizes the ten income deciles defined for each country and year.[18] There is no income data for four countries (HR, EE, LT, UA). The ten income deciles allow a specific differentiation of the income effect.

So far, the health and having children are unaddressed personal-level predictors of preferences for redistribution in the existing literature; I include both predictors in my research. I expect that being in a bad health state will increase the demand for redistribution due to the insurance motive, and the opposite is true for being in a good health state. Potentially, the main effect of having children is related to higher monetary requirement, such as higher food expenditures etc. (see Browning (1992) for a discussion), but I expect that the effect on preferences for redistribution depends on being a net

[18] To be explicit, for each country-income-group a higher and a lower cut-off point are created to derive decile cut-offs by country and wave. Using uniform random values between the two cut-off-points, imputed income values are then constructed. At the second stage, country-specific decile groups are created and individuals are assigned to these deciles. This is done for each country wave respectively. As a last step, the now similar income variables are merged. Comparing the constructed measure income with the respective distributions from the original variables, the new variable seems reliable. See talkstats.com (2014) for further information.

payer or net recipient in the transfer system. On the one hand, having children could increase the demand for redistribution with potential higher monetary requirements, which I expect to be true for net recipients. On the other hand, for net payers, I expect that more children lead to lower preferences for redistribution. This argument might also apply to health. Being ill and having children both are costly, so a net payer would want to redistribute less, and a net recipient would want to redistribute more. Thus, I further estimate an interaction term with having children, health as well as income.

Controls

Further control variables are added; I include individual-level variables reflecting self-centered-motives (unemployment, risk aversion, social mobility), political preferences (union membership, leftist party orientation, trust in the government) and demographics (age, gender, education, marriage, discrimination, religion) following the existing literature (Corneo and Gruener, 2002; Alesina and Ferrara, 2005; Alesina and Angeletos, 2005; Alesina and Giuliano, 2011a; Yamamura, 2012; Pittau et al., 2013; Guillaud, 2013; Dimick et al., 2016).

In the literature, being unemployed and risk aversion have been found to increase the support for redistribution with an amplified insurance motive of redistribution (Sinn, 1996). Risk aversion is proxied by a self-employment dummy following Alesina and Ferrara (2005) as individuals who are self-employed are considered to be more risk-loving. Risk averse individuals are expected to be more likely in favor of redistribution. I proxy for social mobility by using the difference between the respondents' years of education of and those of their fathers as in Alesina and Ferrara (2005).[19] I further include political variables indicating union membership, trust in the legal system and leftist party orientation as well as religion. Following the argumentation of social-preference-models, union members and leftist voters having stronger fairness concerns could serve as an explanation for higher redistributive demand (Alesina and Ferrara, 2005).

On the country level, GDP per capita rates are obtained from the World bank data base (World

[19] The ESS does not contain any question that would allow to directly measure monetary social mobility. Theory suggests that past inter-generational mobility experience leads to less favorably redistributive policies (Piketty, 1995). Due to data limitations, variables controlling for social class affiliation apart from income class as in Corneo and Gruener (2002) or a variable controlling for prospects of social mobility is not available. Due to data availability, the construction of a measure with the difference between the respondents' years of education and those of the mother is not possible.

Bank, 2015) and the OECD (OECD, 2017). I convert GDP to international dollars using purchasing power parity rates for each respective year and country. GDP, reflecting aggregated income, is expected to have an negative impact on voting for redistribution. I use crime rates and the welfare state classification in 3.5 as a robustness check.

2.2 Estimation strategy

My baseline regression is the following:

$$y_{ijkt} = \alpha + \beta X^{l}_{ijt} + \gamma Z^{m}_{jt-1} + \theta_t + \omega_k + \nu_j + \epsilon_{ijkt}. \tag{1}$$

y_{ijt} is the self-reported measure for preferences for redistribution of individual i in country j, in region k in time period t. X^{l}_{ijt} is the vector of l individual-level variables that account for the socioeconomic and demographic factors that may impact preferences for redistribution. Z^{m}_{jt-1} contains the m country-specific characteristics. They are lagged by one period $(t-1)$ to address potential endogeneity concerns.[20] Robustness checks with two and three period lags are available (see 3.5). I include country-fixed-effects ν_j, which capture unmeasured (and constant) differences across countries (e.g. the aggregated inequality aversion across countries). θ_t are the year–fixed–effects, which ensure that the results are not driven by shocks or business cycles that affect everyone in a given year. The error term ϵ_{ijt} is the idiosyncratic error term, which accounts for unobservable factors and measurement errors in the model. Since the focus of my research is on the general influence of the outlined variables, and as period– and country–level–fixed–effects are included, I apply a linear model[21] and I provide

[20] For instance, preferences for redistribution could have a reverse causality effect on the net Gini coefficient. If individuals prefer redistribution, then the net Gini should be lower, implying a negative relationship between preferences and the net Gini. If we regress preferences on the net Gini without controlling for the possibility of reverse causality, then we might end up getting a negative coefficient on net Gini only because of the negative effect of preferences on the net Gini. Although lagging explanatory variables by one period might not remove potential endogeneity, it is the best possible strategy I could think of with the current data. I can not think of a corresponding instrument for inequality which is not correlated with redistribution. Suggestions are warmly welcome.

[21] Although the dependent variable is cardinal such that ordered logit or ordered probit models are often used, Riedl and Geishecker (2014) show that there is no consistent estimator for an ordered logit or probit model that can explicitly incorporate fixed effects to control for heterogeneity. Additionally, they compare ordered probit and logit estimates with linear estimators. If the researcher is mainly interested in relative effects, i.e. in ratios of parameter estimates, the method of choice is simply a linear model delivering the same results as e.g. a binary recoding scheme. In addition, Van Praag et al. (2010) use happiness data to show that the problem of not including fixed effects, such as cross-country differences, is much more severe than a bias ignoring cardinality/ordinality with linear estimation. This work follows these recommendations using a linear model.

robustness estimates of an ordered probit (OP) model (see 3.5). Standard errors are clustered on the country-level and the data is weighted to correct for design effect .[22]

Equation (1) provides the basis for *(H1)*. To test for systematic differences in fairness concerns related to hypothesis *(H2 - H3)*, I include cross-level interaction terms of country-level variables and individual-level variables. I estimate interaction terms to see whether there is a systematic variation with respect to income and health status. To be more explicit, I estimate interaction terms of income and health with inequality (net and market) and with unemployment (average and youth unemployment rate) as well as with having children. Here is an example for the interaction term of inequality and income:

$$y_{ijkt} = \alpha + \beta X^l_{ijt} + \gamma Z^m_{jt-1} + \delta(\text{Gini}_{jt-1} \times \text{Income}_{ijt}) + \theta_t + \omega_k + \nu_j + \epsilon_{ijkt}. \tag{2}$$

Note that with an interaction term, the partial effect of e.g. changes in inequality consists now of two terms $\frac{\partial y_{ijt}}{\partial \text{Gini}_{jt-1}} = \gamma + \delta \text{Income}_{ijt}$. The interaction terms, δ, tell us how inequality changes differ by income. The partial derivative with respect to e.g. income depends on inequality: $\frac{\partial y_{ijt}}{\partial \text{Income}_{ijt}} = \beta + \delta \text{Gini}_{jt-1}$.

Table A.7 summarizes the variables used.

3 Results

First, I describe the most relevant results followed by a discussion of the different inequality measures in Section 3.2. Section 3.5 confirms the robustness of the results.

3.1 Baseline results

Table 2 presents the results of the estimation (1). The inequality and unemployment variables are added separately (except for GDP) due to possible multicollinearity, which could lead to unstable

[22] There is no clear advice on how to adequately weight TSCS bESS survey data using standard estimation methods. The consulted literature does not propose a unique method to apply (European Social Survey, 2014; Gelman, 2007; Graubard and Korn, 1996). I follow the advice of European Social Survey (2014) using a combination of post-stratification weight. Post-stratification weights apply additional information to reduce the sampling error and potential non-response bias weights correct for the fact that most countries taking part in the ESS have different population sizes but similar sample sizes. For more details see European Social Survey (2014).

estimates.[23]

On the country-level, the market Gini and youth unemployment both have a significant and positive effect on preferences for redistribution. This confirms *H1*: The higher inequality and youth unemployment is, the higher the demand for redistribution. The result confirms the MR model, where more market inequality is associated with more redistribution and adds to Houle (2017) who finds that market inequality is associated with more redistribution. General unemployment and the net Gini are not significant. This indicates that respondents might understand the question of the dependent variable in an absolute sense. With a marginal understanding, the relevant measure for inequality would be net inequality, not market inequality.

Estimating equation (1) when health and income are treated as continuous variables do not change the results (see table A.8). I conclude that fairness concerns matter in preferences for redistribution and are triggered, not only by rising market inequality, but also by high youth unemployment *(H1)*.

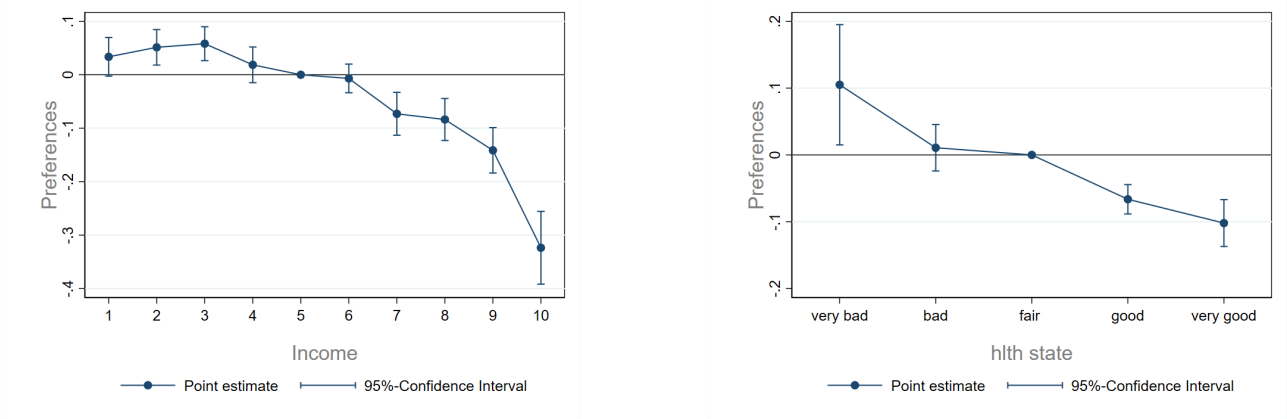
To learn more about the underlying mechanism, I turn to the remaining hypotheses stating that fairness concerns depend on income level (*H2*) and health (*H3*). I first focus on the single effect of income and health as well as the main control variables. The MR model suggests the higher the income of an individual, the less he or she favors redistribution. Individuals with an income below the mean income level (the "poor") are in favor of redistribution, while the contrary is true for individuals with an "income higher than the mean" (the "rich"). An overall negative income effect has been confirmed empirically (e.g. Fong (2001); Yamamura (2012); Guillaud (2013); Kerr (2014); Pittau et al. (2013); Alesina and Ferrara (2005)). The specification with income in ten income quantiles allows me to evaluate the income effect relative to median income (with the fifth income class as reference category). The results reflect predictions of the MR model: Monetary incentives leading to being in favor of redistribution for the poor are positive, while they are negative for the rich, as figure (2a) illustrates. These results imply that people do take the effect of redistribution on their own income into account. Also the absolute size of the negative coefficient above the mean income class increases with income level.

[23] Coefficient standard errors could become inflated.

Table 2: Baseline regression

	(1) Net Gini			(2) Mkt. Gini			(3) Unempl.			(4) Y. unempl.		
	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p
Income:												
Income 1	0.031	0.018	0.104	0.030	0.018	0.113	0.031	0.019	0.118	0.033*	0.019	0.087
Income 2	0.048***	0.016	0.007	0.048***	0.016	0.006	0.049***	0.017	0.007	0.051***	0.017	0.005
Income 3	0.055***	0.016	0.002	0.055***	0.016	0.002	0.058***	0.015	0.001	0.058***	0.016	0.002
Income 4	0.010	0.018	0.603	0.010	0.018	0.600	0.010	0.018	0.606	0.018	0.017	0.290
Income 6	-0.014	0.015	0.356	-0.014	0.014	0.356	-0.011	0.015	0.449	-0.007	0.014	0.621
Income 7	-0.075***	0.020	0.001	-0.075***	0.020	0.001	-0.075***	0.020	0.001	-0.073***	0.020	0.001
Income 8	-0.088***	0.020	0.000	-0.088***	0.019	0.000	-0.086***	0.020	0.000	-0.083***	0.020	0.000
Income 9	-0.147***	0.022	0.000	-0.148***	0.022	0.000	-0.146***	0.023	0.000	-0.141***	0.022	0.000
Income 10	-0.326***	0.034	0.000	-0.326***	0.033	0.000	-0.323***	0.034	0.000	-0.323***	0.035	0.000
Health:												
Health 1	0.111**	0.042	0.014	0.109**	0.042	0.016	0.110**	0.043	0.018	0.105**	0.046	0.032
Health 2	0.020	0.017	0.259	0.019	0.017	0.270	0.019	0.017	0.275	0.011	0.018	0.557
Health 4	-0.065***	0.011	0.000	-0.065***	0.011	0.000	-0.064***	0.011	0.000	-0.066***	0.011	0.000
Health 5	-0.099***	0.018	0.000	-0.099***	0.018	0.000	-0.097***	0.018	0.000	-0.102***	0.018	0.000
Age	0.003***	0.001	0.001	0.003***	0.001	0.001	0.003***	0.001	0.001	0.003***	0.001	0.002
Children	0.055***	0.011	0.000	0.055***	0.011	0.000	0.055***	0.011	0.000	0.057***	0.010	0.000
Log household size	0.053***	0.013	0.000	0.053***	0.013	0.000	0.051***	0.013	0.001	0.045***	0.011	0.000
Discr.	0.144***	0.019	0.000	0.142***	0.018	0.000	0.142***	0.019	0.000	0.139***	0.019	0.000
Female	0.140***	0.015	0.000	0.141***	0.015	0.000	0.140***	0.015	0.000	0.141***	0.016	0.000
Ever had a paid job	0.151***	0.053	0.008	0.107*	0.057	0.070	0.148***	0.050	0.006	0.145***	0.047	0.005
metro area	-0.013	0.018	0.460	-0.012	0.018	0.502	-0.013	0.018	0.493	-0.010	0.018	0.596
Self-empl.	-0.143***	0.026	0.000	-0.144***	0.026	0.000	-0.143***	0.027	0.000	-0.136***	0.026	0.000
Advent.	-0.037***	0.010	0.001	-0.036***	0.010	0.001	-0.039***	0.010	0.001	-0.036***	0.010	0.002
Social mobility	-0.050	0.057	0.388	-0.046	0.055	0.409	-0.042	0.056	0.453	-0.102*	0.052	0.061
Years of educ.	-0.010***	0.002	0.000	-0.010***	0.002	0.000	-0.010***	0.002	0.000	-0.011***	0.002	0.000
L.1 GDP_pC_US	-0.000	0.000	0.454	-0.000	0.000	0.434	-0.000	0.000	0.356	-0.000	0.000	0.529
L.1 gini_disp	0.014	0.031	0.669									
L.1 gini_mkt				0.039**	0.016	0.023						
L.1 unempl_m							0.007	0.005	0.208			
L.1 yunempl_m										0.005**	0.002	0.015
r2	0.1561			0.1566			0.1567			0.1569		
N	84252			84252			82809			80883		
Year FE	✓			✓			✓			✓		
Country FE	✓			✓			✓			✓		
Region FE	✓			✓			✓			✓		
Add. controls	✓			✓			✓			✓		

Note: The table shows the results estimating equation (1). The dependent variable is preference for redistribution. The fifth income class and the fair health class serve as the reference category. Additional controls are the martial status, the occupation type, religion and the current main activity, which are included. Data is weighted (design weight). Standard errors are clustered on the country level.*** Significant at the 1 % level.** Significant at the 5 % level.* Significant at the 10 % level.

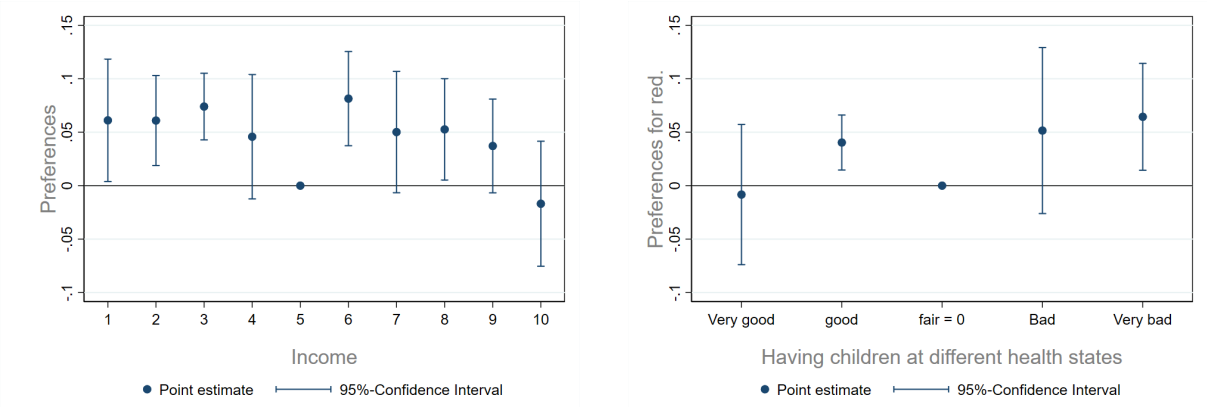


(a) Income effect (b) Health effect

Figure 2: The effect of income and health on preferences for redistribution. Note: The graphs show point estimates and 95% confidence intervals from the estimation results presented in table 2.

A positive subjective health decreases the demand for redistribution, while the contrary is true for individuals who are in a poor health state (using "fair" health state as reference category), see figure 2b. The effect shows that if someone has a poor health condition, there is a higher demand for redistribution. The worse the health, the stronger the effect is, i.e. the coefficient of "very bad" is bigger than the coefficient of being in a bad health state. Ill people have higher health costs and are more dependent on transfer payments than healthy people.

Results for further control variables are as follows. Having children is associated with a higher level of support for redistribution (significant on the 5% level), see table 2. The interaction term of



(a) Interaction having children and income (b) Interaction having children and health

Figure 3: The effect of having children. Note: Values are calculated using the results of table A.11 in which interaction terms are included. Figure 3a shows the calculation of the total "having children" at different income levels and figure 3b shows the calculation of the total "having children" at different health levels.

"having children" with income reveals that the effect of having children is positive for net recipients,

i.e. here the first – seventh income class. In contrast, for net payers (8th - 10th income class), the effect is not significant.[24] The interaction with health shows that individuals in a good health state who have children, have an increasing demand for redistribution. Effects for other health states are insignificant. The result controls for income and shows that being ill and having children both are costly, so a net payer would want to redistribute less, and a net recipient would want to redistribute more.

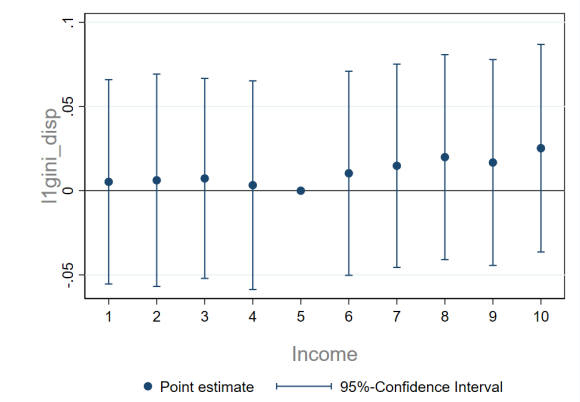
The effects of proxies for being self-interested are consistent with theoretical predictions (Piketty, 1995) and previous empirical work (Alesina and Ferrara, 2005; Alesina and Giuliano, 2011a; Fong, 2001; Pittau et al., 2013). Being unemployed increases preferences for redistribution strongly. As expected, being risk-loving, measured by being self-employed as well as being adventurous, significantly decreases the wish for redistribution. I interpret the effects of risk aversion (the contrary of risk-loving), health status, as well as personal unemployment as the insurance effect of the welfare state (Sinn (1995)), i.e. increasing demand for the insurance of individuals due to lower expected income. In contrast to the expectations, the proxy for social mobility is not significant. Alesina and Ferrara (2005) found a positive influence of educational achievements interpreted as social mobility.[25] The results for included demographic controls are in line with previous work (Alesina and Ferrara, 2005; Fong, 2001; Alesina and Giuliano, 2011a; Pittau et al., 2013). Consistent with other studies, being female and belonging to a minority ethnic group (discrimination) in the country increases the demand for redistribution. Being married is not significant. Education is highly significant, with an additional year of education in comparison to average education, the preferences for redistribution decreases. Prospects of upward mobility stemming from higher education could serve as an explanation.

3.2 Income– and health–dependent fairness concerns

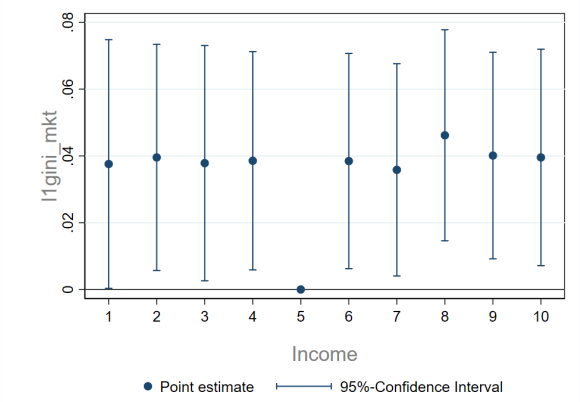
Table 3 presents the result of estimating the interaction terms with respect to income. The core results of table 3 are plotted in figure 4.

[24] The effect of having children may be related to other things such as altruism or frustration that goes beyond having higher expenses.

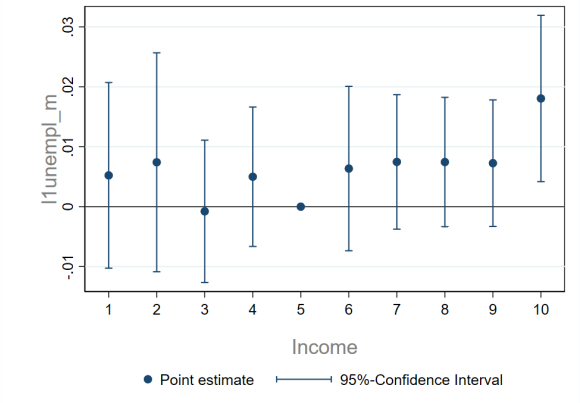
[25] Difference in education levels from previous generations might be a weak proxy for general overall trends toward higher education. With the average age of 47.5 in the data set, there is, in addition, the possibility that education levels of the parental generation are biased due to the Second World War.



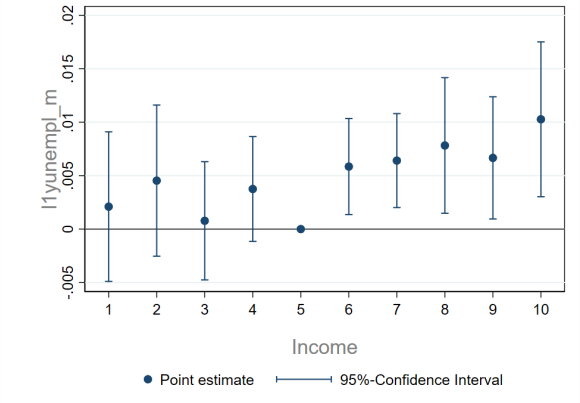
(a) The effect of net Gini at different income levels



(b) The effect of market Gini at different income levels



(c) The effect of unemployment at different income levels



(d) The effect of youth unemployment at different income levels

Figure 4: Income interaction terms. Note: Values are calculated using the results of table 3 in which interaction terms are included. Figure 4a shows the calculation of the total net Gini effect at different income levels, column (1) of 3. Figure 4b presents calculations of total market Gini effect, column (2) of 3 and figure 4c and 4d display calculations of total (youth) unemployment effect, column (3) and (4).

The total effect of net income inequality for different income levels (i.e. the partial derivative with respect to the net Gini, which depends on income level) presented in figure 4a shows no significant effect. The total effect of the market Gini (figure 4b) illustrates that all income classes increase the demand for redistribution, when market inequality rises.

The interaction term with income and overall unemployment is only significant at the 10th income class (see figure 4c). With youth unemployment, the effect is even stronger, see figure 4d, which illustrates the effect of youth unemployment at different income classes. The coefficient for the poor is not significant. But above the mean income class, the effect is positive and significant. Alesina and Angeletos (2005) show that higher fairness concerns lead to a higher level of redistribution as individuals expect the government to intervene and correct economic outcomes when they feel that social competition is unfair. Results show that only the rich care about rising youth unemployment but not unemployment in general. This can be explained by the fact that youth unemployment is generally not conceived as a sign of a missing willingness to work but rather an economic and institutional failure. Youth unemployment moderates the richs opposition against redistribution. So in the case of youth unemployment, i.e. inequality which is the result of bad luck rather than lacking effort, the rich seem to have more fairness concerns.

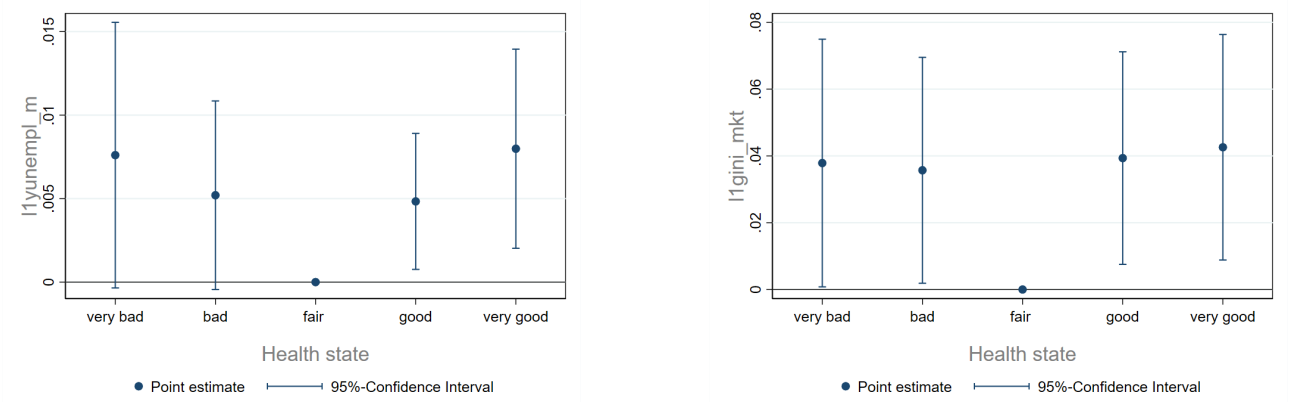
H2 is supported by the evidence.[26] I interpret the positive effect of unemployment at the 10th income class and youth unemployment of the rich as fairness concerns. If one is well off (in terms of income), there is capacity to take care of others and deal with social problems since one has to worry less about one's own condition. Further discussion and analysis of the different inequality measures is given in 3.2. The findings are in line with Hoechtl et al. (2012) who have shown in an experiment that inequality aversion matters more for redistribution outcomes in majority voting with a rich majority than with a poor majority. In addition, the findings support the theory of "income-dependent altruism" (Dimick et al., 2016) for Europe.

An alternative explanation would be that risk aversion matters, but not fairness concerns. Changes

[26] Note that the data demonstrates effects of "mean preserving" increases in inequality. To be precise, if inequality increases, there are more people that have an income of less than the mean, and more people that have an income higher than the mean one. I cannot capture this change in absolute income as I am using TSCS data and not panel data where I could track individuals over time and see this change. I do compare the deciles with the 5th income class, which are calculated for every period.

in youth unemployment could be interpreted as increasing the risk of an unstable income and might thus increase the demand for social insurance. Two arguments are against this interpretation. First, the regression controls for risk aversion. Second, this effect should then be highly positive for the poor and not only for the top income classes. Only post-transfer inequality matters to the rich, which reflects the income distribution translating into available income for consumption. If the poor, despite redistribution, can afford little, this triggers fairness concerns. I conclude that fairness concerns matter in preference for redistribution.[27] One further point to consider is that the elderly drive the effect due to pensions. Figure 10b plots the point estimates, excluding pensioners, from the sample – the effect is still positive and significant for the rich.

As *H3* states, the degree of fairness concerns might not only depend on the level of income, but on the health as well. Table 4 presents the estimation results for interaction terms with health state and figure 5 plots the marginal effects.



(a) The effect of youth unemployment at different states of health

(b) The effect of market Gini at different states of health

Figure 5: Health interaction terms. Note: Values are calculated using the results of table 4 in which interaction terms are included. Figure 5a shows the calculation of the total youth unemployment effect for different states of health, column (2) of 4. Figure 5b presents calculations of total market Gini, column (3) of 4.

The total effect of unemployment does not show significant heterogeneity with respect to the health state (see figure 11). However, the total effect of marekt income inequality in figure 5b shows a positive and significant coefficient for every health state. This indicates that being in a very good

[27] It is also possible that the rich are only interested in reducing inequality because otherwise there will be political uprising and unrest. I address this concern in 3.5.

Table 3: Income interaction results

	(1) Net Gini			(2) Mkt. Gini			(3) Unempl.			(4) Y. unempl.		
	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p
Income 1	0.243**	0.090	0.012	0.111	0.156	0.486	0.022	0.026	0.392	0.050	0.031	0.121
Income 2	0.236**	0.097	0.022	0.035	0.234	0.882	0.024	0.037	0.526	0.027	0.038	0.485
Income 3	0.211**	0.085	0.020	0.124	0.198	0.536	0.095**	0.037	0.015	0.096**	0.039	0.020
Income 4	0.281***	0.087	0.003	0.044	0.166	0.794	0.002	0.035	0.950	0.007	0.032	0.827
Income 6	0.052	0.094	0.586	0.025	0.201	0.902	-0.029	0.029	0.330	-0.052	0.031	0.101
Income 7	-0.138	0.095	0.155	0.089	0.261	0.736	-0.101**	0.039	0.015	-0.128***	0.045	0.008
Income 8	-0.299*	0.152	0.060	-0.419*	0.212	0.058	-0.112**	0.051	0.039	-0.161***	0.058	0.010
Income 9	-0.267	0.163	0.114	-0.188	0.238	0.438	-0.170***	0.049	0.002	-0.200***	0.056	0.001
Income 10	-0.691***	0.233	0.006	-0.339	0.463	0.470	-0.426***	0.069	0.000	-0.439***	0.074	0.000
L.1 gini_disp	0.013	0.031	0.687									
Income 1 × L.1 gini_disp	-0.007**	0.003	0.012									
Income 2 × L.1 gini_disp	-0.006*	0.003	0.072									
Income 3 × L.1 gini_disp	-0.005*	0.003	0.052									
Income 4 × L.1 gini_disp	-0.009***	0.003	0.003									
Income 6 × L.1 gini_disp	-0.002	0.003	0.500									
Income 7 × L.1 gini_disp	0.002	0.003	0.501									
Income 8 × L.1 gini_disp	0.007	0.005	0.178									
Income 9 × L.1 gini_disp	0.004	0.006	0.481									
Income 10 × L.1 gini_disp	0.013	0.008	0.141									
L.1 gini_mkt				0.039**	0.018	0.035						
Income 1 × L.1 gini_mkt				-0.002	0.003	0.610						
Income 2 × L.1 gini_mkt				0.000	0.005	0.957						
Income 3 × L.1 gini_mkt				-0.001	0.004	0.724						
Income 4 × L.1 gini_mkt				-0.001	0.003	0.837						
Income 6 × L.1 gini_mkt				-0.001	0.004	0.850						
Income 7 × L.1 gini_mkt				-0.003	0.006	0.545						
Income 8 × L.1 gini_mkt				0.007	0.004	0.136						
Income 9 × L.1 gini_mkt				0.001	0.005	0.870						
Income 10 × L.1 gini_mkt				0.000	0.010	0.978						
L.1 unempl_m							0.004	0.007	0.561			
Income 1 × L.1 unempl_m							0.001	0.003	0.683			
Income 2 × L.1 unempl_m							0.003	0.004	0.444			
Income 3 × L.1 unempl_m							-0.005	0.004	0.190			
Income 4 × L.1 unempl_m							0.001	0.004	0.791			
Income 6 × L.1 unempl_m							0.002	0.003	0.399			
Income 7 × L.1 unempl_m							0.003	0.005	0.457			
Income 8 × L.1 unempl_m							0.003	0.006	0.591			
Income 9 × L.1 unempl_m							0.003	0.006	0.622			
Income 10 × L.1 unempl_m							0.014	0.009	0.142			
L.1 yunempl_m										0.003	0.003	0.255
Income 1 × L.1 yunempl_m										-0.001	0.002	0.603
Income 2 × L.1 yunempl_m										0.001	0.002	0.503
Income 3 × L.1 yunempl_m										-0.002	0.002	0.221
Income 4 × L.1 yunempl_m										0.001	0.002	0.707
Income 6 × L.1 yunempl_m										0.003*	0.002	0.075
Income 7 × L.1 yunempl_m										0.003	0.002	0.159
Income 8 × L.1 yunempl_m										0.005	0.004	0.206
Income 9 × L.1 yunempl_m										0.004	0.004	0.322
Income 10 × L.1 yunempl_m										0.007	0.004	0.121
r2	0.1570			0.1566			0.1568			0.1572		
N	84252			84252			82809			80883		
Year FE	✓			✓			✓			✓		
Country FE	✓			✓			✓			✓		
Region FE	✓			✓			✓			✓		
All controls	✓			✓			✓			✓		

Note: The table shows the results estimating equation (2). Data is weighted (design weight). The fifth income class and the fair health class serve as the reference category. All available controls are included with additional controls such as the martial status, the occupation type, religion and the current main activity, which are included. Standard errors are clustered on the country level.*** Significant at the 1 % level.** Significant at the 5 % level.* Significant at the 10 % level.

and good health state increases the demand for redistribution when inequality rises, although being healthy decreases the demand for redistribution. The total effect of youth unemployment shows a significant and positive effect for the healthy ones, whereas being sick, the effect is not significant. The pattern is very similar and related to income-dependent fairness concerns: when one is unhealthy and is rather preoccupied with ones' own situation, one has no interest in worrying about about social problems, since an illness can result in self-preoccupation. When, on the other hand, one is healthy, one has enough capacity to deal with social problems. In contrast, the positive partial derivative of inequality for individuals with a "very good" health state is consistent with "health-dependent fairness concerns", triggered by changes in market inequality *(H3)*.

Table 4: Health interactions

	(1) Net Gini			(2) Mkt. Gini			(3) Unempl.			(4) Y. unempl.		
	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p
Health 1	0.098	0.225	0.666	0.119	0.349	0.736	0.017	0.082	0.835	0.033	0.110	0.765
Health 2	0.071	0.150	0.640	0.137	0.211	0.523	0.009	0.031	0.776	-0.012	0.028	0.684
Health 4	-0.142**	0.061	0.026	-0.118	0.180	0.517	-0.060*	0.031	0.063	-0.077**	0.032	0.023
Health 5	-0.369**	0.138	0.013	-0.309	0.327	0.353	-0.128**	0.049	0.015	-0.163***	0.049	0.003
L.1 gini_disp	0.011	0.031	0.720									
Health 1 × L.1 gini_disp	0.000	0.007	0.969									
Health 2 × L.1 gini_disp	-0.002	0.005	0.733									
Health 4 × L.1 gini_disp	0.003	0.002	0.193									
Health 5 × L.1 gini_disp	0.010*	0.005	0.076									
L.1 gini_mkt				0.038**	0.017	0.029						
Health 1 × L.1 gini_mkt				-0.000	0.007	0.963						
Health 2 × L.1 gini_mkt				-0.002	0.004	0.566						
Health 4 × L.1 gini_mkt				0.001	0.004	0.763						
Health 5 × L.1 gini_mkt				0.004	0.007	0.531						
L.1 unempl_m							0.006	0.006	0.338			
Health 1 × L.1 unempl_m							0.010	0.008	0.199			
Health 2 × L.1 unempl_m							0.001	0.003	0.762			
Health 4 × L.1 unempl_m							-0.000	0.004	0.921			
Health 5 × L.1 unempl_m							0.004	0.007	0.527			
L.1 yunempl_m										0.004*	0.002	0.096
Health 1 × L.1 yunempl_m										0.003	0.004	0.369
Health 2 × L.1 yunempl_m										0.001	0.001	0.414
Health 4 × L.1 yunempl_m										0.001	0.002	0.711
Health 5 × L.1 yunempl_m										0.004	0.003	0.255
r2	0.1538			0.1541			0.1542			0.1544		
N	84252			84252			82809			80883		
Year FE	✓			✓			✓			✓		
Country FE	✓			✓			✓			✓		
Region FE	✓			✓			✓			✓		
All controls	✓			✓			✓			✓		

Note: The table shows results estimating equation (2). Data is weighted (design weight). All available controls are included with additional controls such as the martial status, the occupation type, religion and the current main activity, which are included. Standard errors are clustered on the country level.*** Significant at the 1 % level.** Significant at the 5 % level.* Significant at the 10 % level.

The causality could also be reversed: If the dependent variable question is understood in an absolute sense, societies who are more willing to redistribute (and have consequently less inequality)

could be healthier (see Smith (1999) for a discussion). However, if the more equal societies are healthier, then I would expect the overall coefficient for "being healthy" to be positive as well. But the effect is negative (see also table 2). Furthermore, all EU countries have government–subsidized health insurance. Thus, due to the universal health care in the EU, I exclude the possibility of reverse causality.[28]

Fairness concerns, measured by the general interest in "helping others" complement *H2* and *H3*. I estimate a series of interaction terms for "helping others" and "volunteering" with "health" and "income." Table A.10 presents the results and figure 6 illustrates marginal effects for helping others at different states of health and income.

Fairness concerns, measured by "helping others" (column 1), have a positive and significant effect on preferences for redistribution. If there is a general interest in helping others, i.e. if it is not relevant who is the benefactor, but only the final result counts (that the disadvantaged will be helped), the positive effect is in line with the predictions. Fairness concerns, measured by "helping others", increase preferences for redistribution. The effect is higher for the rich than for the poor, (i.e. the partial derivative with respect to "helping others" which depends on income), see figure 6a. For the very poor, the effect is not significant. Similarly, the fairness concerns of the healthy are significantly higher than the fairness concerns of the sick (column 3), see figure 6b. Results are consistent with "income and health-dependent fairness concerns".

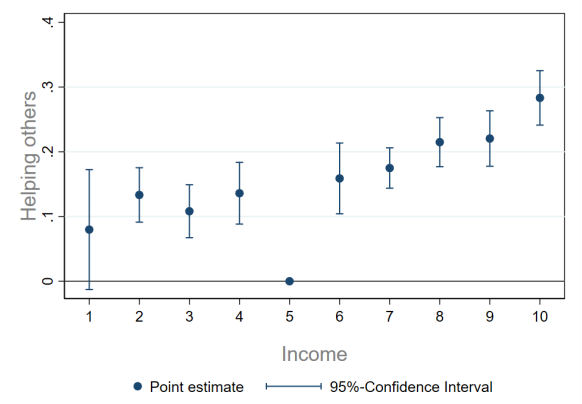
The effect of "volunteering" does not vary significantly with health nor with income.

3.3 What would the rich and healthy finally vote for?

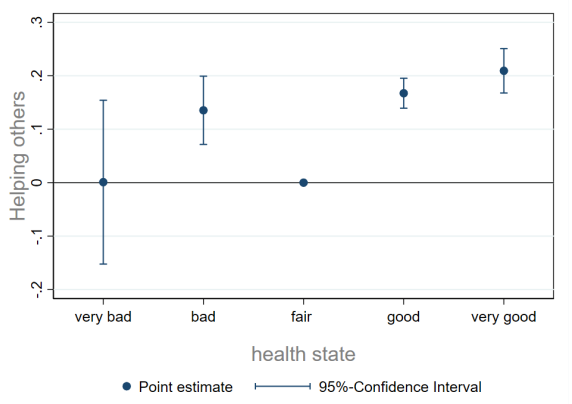
Results show that income– and health–dependent fairness concerns exist and counteract monetary incentives to vote for redistribution. To see if a certain level of inequality or (youth) unemployment may negate income and health effects, I calculate the income and health effect at the respective lowest

[28] Furthermore, Smith (1999) investigates the hypothesis that inequality has a negative influence on health and does not find evidence. Deaton (2003) complements this finding and provides evidence that it is not true that income inequality itself is a major determinant of a population's health. It is rather poverty which has an effect on the health of the poor and not the rich becoming richer.

Figure 6: The effect of "Helping others"



(a) The effect of "helping others" at different income levels



(b) The effect of "helping others" at different health levels

Note: Values are calculated using the results of table A.10 in which interaction terms are included. Figure 6a shows calculation of the total "helping others" at different income levels. Figure 6b presents calculations of total "helping others" effect at different states of health.

and highest levels of income inequality and (youth) unemployment presented in figure 7.[29]

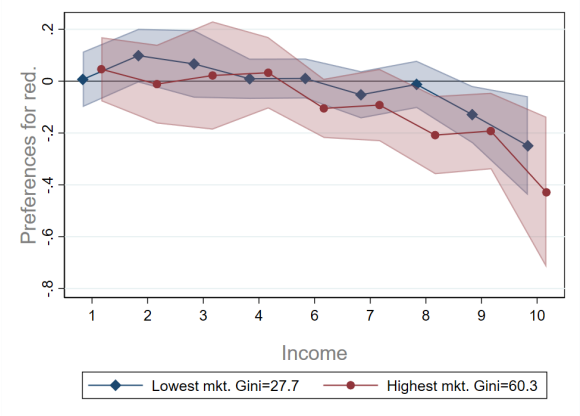
The income effect evaluated at lowest and highest net income inequality levels for the rich respondents is always negative, see figure 7b. For the lowest net Gini level (red area), the effect is more negative than for the highest level (blue area). At a high net income inequality rate, the effect is not significant. At high levels of net income inequality, even the rich might vote in favor of redistribution. Figure 7a shows that different levels of the market Gini do not change the income effect significantly – there is no variation with respect to highest and lowest market Gini levels.

The effect of income evaluated at different youth unemployment levels adds to this (figure 7c). At low youth unemployment rates (red area), the income effect is negative. However, at very high youth unemployment rates (blue area), even the relatively rich have a demand for redistribution (6th – 8th income class).

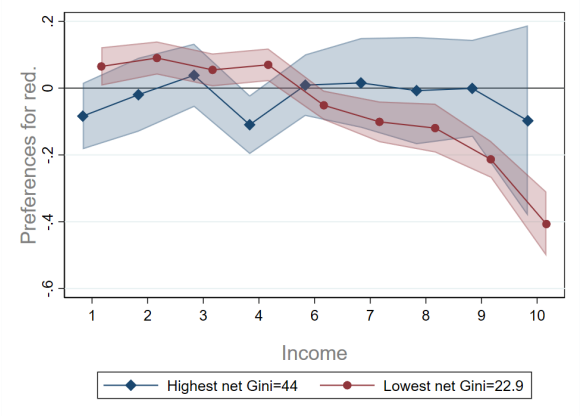
Figure 8 presents the effect of the health, evaluated at the lowest and highest level of youth unemployment, to see which levels might change the sign of the different health.

At low levels of youth unemployment (red areas), being in a good health state has a significant

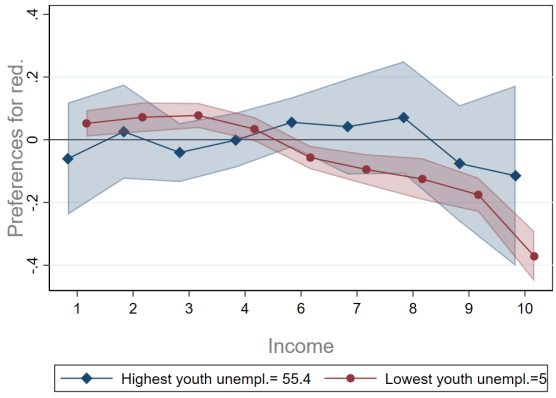
[29] I focus on the two extreme values (min and max) to illustrate if someone could be in favor of redistribution at very high inequality and youth unemployment levels. I do not know how people perceive inequality and youth unemployment, but I assume that at very extreme values, the level of inequality or youth unemployment is probably much more noticeable than at medium levels.



(a) Income effect at market Gini levels

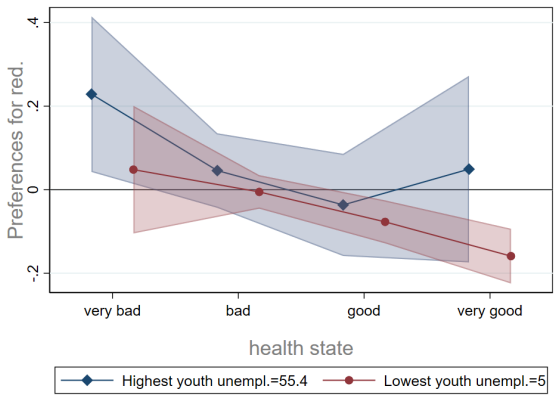


(b) Income effect at net Gini levels



(c) Income effect at youth unemployment levels

Figure 7: Income effects evaluated at highest and lowest market / net Gini and youth unemployment levels. Note: The graphs show point estimates and 90% confidence intervals from the estimation results presented in table 3. The shaded areas indicate the 90% pointwise confidence bands and the circles point estimates.



(a) The effect of health at different youth unemployment levels

Figure 8: Health interaction terms. Note: Values are calculated using the results of table 4 in which interaction terms are included. The shaded areas indicate the 90% pointwise confidence bands and the circles point estimates.

negative effect on preferences for redistribution (see figure 8a). However, at high levels of youth unemployment, the point estimates show a positive and insignificant effect. Fairness concerns and the self–centered motive, which potentially drive the effect of health on preferences for redistribution, might cancel each other out.

Health, when evaluated at different unemployment or inequality levels does not reveal any different pattern (figure 15).

3.4 Different measures of inequality

Inequality is associated with higher preferences for redistribution. However, more complexity lies behind this statement. One has to decide if the calculations of income inequality include government help, which could moderate the change (market vs. net income inequality). Furthermore, it is not clear which monetary inequalities (wealth or income) between whom matter, i.e. the poor and the middle class, the middle class and the wealthy, or the 99 % and the 1 %?

The results show that market inequality matters in preference for redistribution, but not net income inequality. To learn more about the differences in inequality measures, I use an additional pre-tax/ pre-redistribution indicator, namely Top 1% income shares and Top 1% wealth concentration of the WID.world Database (World Inequality Database, 2019). Data for Top 1% wealth shares is, however, only available for France, Russia and Great Britain. Results are reported in table 5. An increase in of Top 1% income concentration does not increase the demand for redistribution – the effect is not significant for any of the income and health classes.

Although the wealth inequality data is imperfect and provisional (see Alvaredo et al. (2017)), there is a clear pattern: An increase in Top 1% wealth shares decreases the demand for redistribution for the lower income classes(first – 8th) as illustrated in figure **??**. Missing trust in the government might explain the pattern. However, the effect does not change once we include "trust in the government" (see 12a). The result suggests that confidence in redistribution efficiency is lost if wealth inequality increases. The effect of an increase in wealth or Top 1% income inequality does not vary at different states of health.

Table 5: Different inequality measures

	(1)			(2)			(3)			(4)		
	Top 1% income			Top 1% wealth			Top 1% income			Top 1% wealth		
	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p
Income 1	0.080**	0.033	0.023	0.145	0.063	0.104	0.033*	0.018	0.081	-0.045	0.030	0.229
Income 2	0.071	0.042	0.103	0.126	0.083	0.226	0.069***	0.016	0.000	0.044	0.039	0.341
Income 3	-0.003	0.041	0.939	0.216***	0.018	0.001	0.052***	0.017	0.004	0.108**	0.024	0.020
Income 4	0.027	0.032	0.402	0.266**	0.080	0.044	0.032**	0.015	0.043	-0.024	0.059	0.704
Income 6	-0.058	0.039	0.153	0.155*	0.052	0.059	-0.032**	0.014	0.032	-0.040	0.037	0.357
Income 7	-0.094*	0.049	0.067	0.079	0.054	0.240	-0.065***	0.019	0.002	-0.095*	0.035	0.072
Income 8	-0.126**	0.056	0.034	0.096	0.053	0.171	-0.082***	0.021	0.000	-0.148*	0.055	0.075
Income 9	-0.153***	0.054	0.008	-0.352**	0.075	0.018	-0.155***	0.018	0.000	-0.238***	0.028	0.003
Income 10	-0.309***	0.097	0.004	-0.346*	0.132	0.079	-0.322***	0.029	0.000	-0.411***	0.038	0.002
L.1 lp99p100	-0.363	0.807	0.657				-0.444	0.808	0.588			
Income 1 × L.1 lp99p100	-0.497*	0.252	0.059									
Income 2 × L.1 lp99p100	-0.022	0.384	0.954									
Income 3 × L.1 lp99p100	0.589*	0.314	0.072									
Income 4 × L.1 lp99p100	0.058	0.244	0.813									
Income 6 × L.1 lp99p100	0.277	0.425	0.521									
Income 7 × L.1 lp99p100	0.305	0.543	0.579									
Income 8 × L.1 lp99p100	0.469	0.541	0.394									
Income 9 × L.1 lp99p100	-0.024	0.668	0.972									
Income 10 × L.1 lp99p100	-0.135	1.026	0.896									
Health 1	0.114**	0.046	0.019	0.060	0.076	0.487	0.104	0.107	0.342	-0.444	0.376	0.322
Health 2	0.018	0.017	0.306	0.060	0.061	0.403	0.068	0.048	0.172	-0.160	0.168	0.412
Health 4	-0.066***	0.012	0.000	-0.019	0.042	0.675	-0.090***	0.028	0.003	-0.052	0.101	0.638
Health 5	-0.102***	0.018	0.000	-0.093	0.052	0.175	-0.149***	0.044	0.002	-0.217	0.106	0.134
L.1 p99p100_wealth				-0.409	0.760	0.628				-1.006	0.695	0.243
Income 1 × L.1 p99p100_wealth				-0.735**	0.205	0.037						
Income 2 × L.1 p99p100_wealth				-0.314	0.175	0.171						
Income 3 × L.1 p99p100_wealth				-0.407***	0.032	0.001						
Income 4 × L.1 p99p100_wealth				-1.070**	0.188	0.011						
Income 6 × L.1 p99p100_wealth				-0.735**	0.140	0.013						
Income 7 × L.1 p99p100_wealth				-0.658**	0.188	0.040						
Income 8 × L.1 p99p100_wealth				-0.938***	0.154	0.009						
Income 9 × L.1 p99p100_wealth				0.475	0.208	0.107						
Income 10 × L.1 p99p100_wealth				-0.227	0.413	0.621						
Health 1 × L.1 lp99p100							0.111	1.087	0.919			
Health 2 × L.1 lp99p100							-0.513	0.484	0.299			
Health 4 × L.1 lp99p100							0.250	0.257	0.340			
Health 5 × L.1 lp99p100							0.508	0.401	0.216			
Health 1 × L.1 p99p100_wealth										1.696	1.162	0.241
Health 2 × L.1 p99p100_wealth										0.711	0.376	0.155
Health 4 × L.1 p99p100_wealth										0.101	0.224	0.683
Health 5 × L.1 p99p100_wealth										0.507	0.451	0.343
r2	0.1593			0.1443			0.1593			0.1436		
N	78222			9876			78222			9876		
Year FE	✓			✓			✓			✓		
Country FE	✓			✓			✓			✓		
Region FE	✓			✓			✓			✓		
All controls	✓			✓			✓			✓		

Note: The table shows the results estimating equation (2) with additional inequality measures. Data is weighted (design weight). The fifth income class and the fair health class serve as the reference category. All available controls are included with additional controls such as the martial status, the occupation type, religion and the current main activity, which are included. Standard errors are clustered on the country level.*** Significant at the 1 % level.** Significant at the 5 % level.* Significant at the 10 % level.

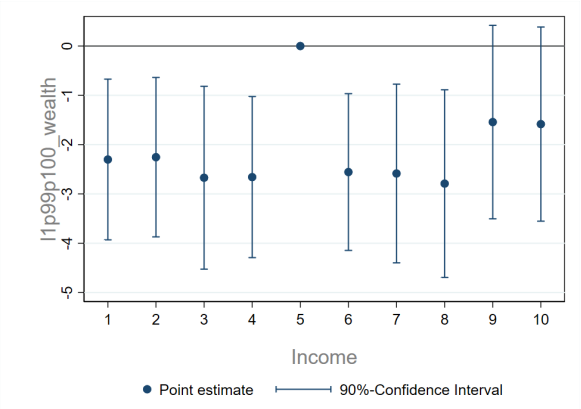


Figure 9: Top 1% wealth at different income levels. Note: Values are calculated using the results of table 5 in which interaction terms are included. Figure **??** shows calculation of the total Top 1% wealth effect for different income levels.

It is instructive to learn that different indicators of inequality affect preference for redistribution differently. The results present effects of different aggregated macro inequality levels on preferences for redistribution but not how respondents perceive inequality. How inequality matters in preferences for redistribution is certainly a question of access to information and the ability to process it. I abstract from potential misperceptions of the income distribution which may have substantial implications for the determination of policy outcomes (see Cruces et al. (2013)).

3.5 Robustness analysis

I estimate different specifications to gain insights into the sensitivity of the model with respect to used controls. As I am aware of potential mulitcollinearity problems with political variables (trust, leftist orientation, union membership), I have estimated the main models without the respective controls. Results including the controls remain valid (see table A.12, column (1)). The included political covariates indicating union membership or leftist party orientation have a significant, positive effect on preferences for redistribution in line with Kerr (2014) and Alesina and Ferrara (2005). Results are also robust to using survey round dummies instead of year dummies (see table A.13).

In addition, I test the stability of the results to the specification choice. I apply an Ordered Probit model to see if this specification changes the results compared to the linear model. Results are estimated by Maximum Likelihood Estimation and presented in table A.14. The magnitude of the

OP coefficients does not have a simple interpretation; however, the sign of the effect and statistical significance agree with the linear model.

In the main analysis, I am using one-period lags. Table A.15 demonstrates results when using a three-period lag structure of the country-level variables and table A.16 presents four-period lags. The coefficients and significance do not change.

Following Dimick et al. (2016), it could be the case that the level of crime could influence my estimates as a potential concern of the rich, unconnected to altruism, for the negative externalities of inequality (see for example Cloward and Piven (1972)). In table A.17, I use data from the Eurostat database (Eurostat, 2019) on total intentional homicides to proxy for crime. Results remain valid.

To test in a broad sense whether welfare state regimes per se matter, and with respect to fairness concerns, the different countries are classified by constructing different dummy variables, using the welfare classifications of Ferrera (1996) extended by Esping-Andersen (1990). Welfare states are differentiated according to the quality of social rights, social stratification, and the arrangements between market, state and family. The following categories are used: "Nordic," "Liberal," "Continental," "Southern" and "Eastern and Central." I use being a "Southern country" as the base category. Table A.18 presents the results, which leave the core result unchanged.

4 Concluding remarks

The growing importance of rising inequality and its increasing public discussion strengthens government incentives to reduce income inequality. Analysis to determine where the support for redistribution comes from is desirable.

This paper concentrates on fairness concerns in preferences for redistribution. Linking European survey data to aggregated country level indicators, I show that market inequality and youth unemployment increase the demand for redistribution. Fairness concerns are triggered by market income inequality and youth unemployment *(H1)*. In addition, mean impacts would miss a great deal. There are fairness concerns in voting for redistribution which vary not only with income (i.e. "income-dependent-altruism" as suggested by Dimick et al. (2016)) but also with the subjective health state,

which I call "health– dependent fairness concerns". A subjective health and high income levels decreases the demand for redistribution, the effect of changes in market income inequality and youth unemployment are positive for the rich and healthy *(H2 - H3)*. In addition, fairness concerns measured by the interest in "helping others" varies with income and health as well. Furthermore, the effect of having children is positive for net recipients, but for net payers, the effect is negative. The results are robust to the inclusion of a rich set of controls and various specifications. However, an increase in Top 1% wealth concentration decreases the demand for redistribution.

The results show that societal issues such as high youth unemployment and increasing market inequality are relevant and should be actively used to gain approval for unpopular issues such as tax increases to finance redistribution. This applies also to the rich part of society, who generally dislike redistribution. Although this paper concentrates on fairness concerns in preferences for redistribution, fairness concerns might have similar implications for a wider range of political decisions e.g. public good provision. When rich and healthy individuals negatively valuate high levels of inequality and youth unemployment, they might consider higher public good provision in form of education as fair and desirable.

Behind inequality and how it is understood lies a morass of complexities. I find that it is only market inequality which increase the demand for redistribution. However, Top 1% wealth concentration seems to decrease the demand for redistribution. It is not clear why one measure first and foremost addresses only fairness concerns. In addition, this paper is only part of the story as I do focuses on the demand for redistribution, and I ignore how (or even if) this demand is translated into policy. Further research should focus on the complexity of inequality, how it is understood and perceived and consequently how it matters in preferences for redistribution.

Acknowledgements

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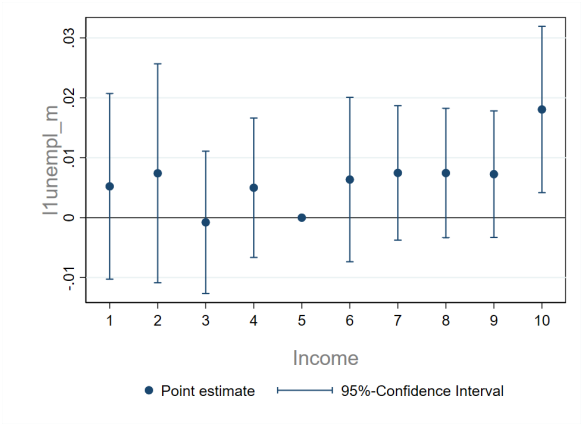
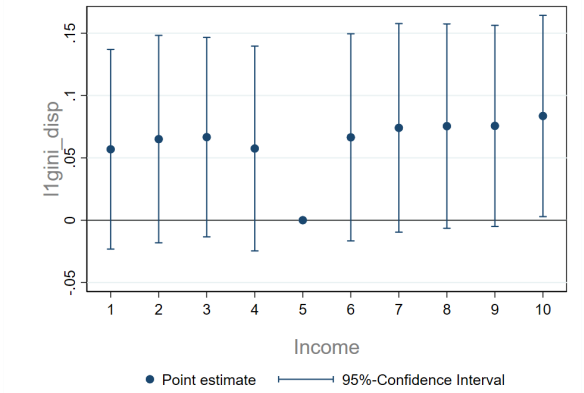
A Appendix

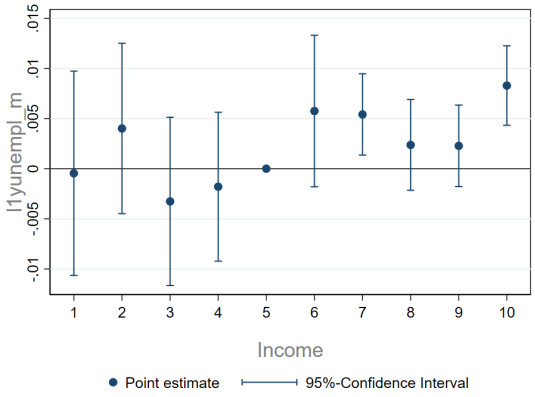
A.1 Additional results and figures



(a) The effect of unemployment at different income levels



(b) The effect of net Gini at different income levels, excluding $age > 64$



(c) The effect of youth unemployment at different income levels, excluding $age > 64$

Figure 10: Additional income interaction terms. Note: Figure 10a shows the calculation of the total net Gini effect at different income levels, column (3) of 3. Figure 10b presents the calculations of total net Gini effect and 10c shows calculation of the total youth unemployment effect for different income levels, but excluding seniors.

Table A.6: Summary statistics

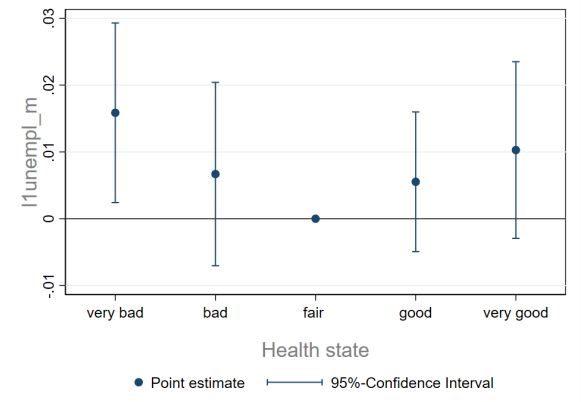
	mean	sd	min	max
income	5.33	2.82	1.000	10.000
hlth	3.76	0.93	1.000	5.000
agea	47.74	18.46	13.000	123.000
childever1	0.68	0.47	0.000	1.000
lnhhsz	0.88	0.54	0.000	3.091
discrimination	0.07	0.25	0.000	1.000
female	0.54	0.50	0.000	1.000
pdjobev	0.90	0.29	0.000	1.000
metro	0.34	0.47	0.000	1.000
selfempl	0.10	0.30	0.000	1.000
advent	0.38	0.49	0.000	1.000
socialmob	0.54	0.50	0.000	1.000
eduyrs	12.22	4.07	0.000	56.000
act__work	0.49	0.50	0.000	1.000
act__edu	0.08	0.28	0.000	1.000
act__uel	0.04	0.20	0.000	1.000
act__ued	0.02	0.13	0.000	1.000
act__dis	0.02	0.15	0.000	1.000
act__ret	0.24	0.43	0.000	1.000
act__mil	0.00	0.04	0.000	1.000
act__hswk	0.09	0.29	0.000	1.000
act__oth	0.01	0.11	0.000	1.000
mar__marr	0.53	0.50	0.000	1.000
mar__divs	0.14	0.35	0.000	1.000
mar__wid	0.18	0.38	0.000	1.000
mar__nevm	0.15	0.36	0.000	1.000
mar_mis	0.02	0.13	0.000	1.000
occ__armf	0.00	0.06	0.000	1.000
occ__mngt	0.08	0.28	0.000	1.000
occ__prof	0.14	0.34	0.000	1.000
occ__tech	0.15	0.36	0.000	1.000
occ__clrk	0.11	0.31	0.000	1.000
occ__srvc	0.15	0.36	0.000	1.000
occ__agri	0.04	0.19	0.000	1.000
occ__crft	0.13	0.34	0.000	1.000
occ__oprt	0.08	0.28	0.000	1.000
occ__eocc	0.12	0.32	0.000	1.000
rel__none	0.38	0.49	0.000	1.000
rel__cath	0.30	0.46	0.000	1.000
rel__prot	0.13	0.34	0.000	1.000
rel__orth	0.09	0.29	0.000	1.000
rel__ochr	0.01	0.11	0.000	1.000
rel__jew	0.03	0.17	0.000	1.000
rel__islm	0.03	0.18	0.000	1.000
rel__othn	0.01	0.07	0.000	1.000
trust	5.03	2.71	0.000	10.000
union_ev	0.42	0.49	0.000	1.000
union_cur	0.18	0.39	0.000	1.000
volu	0.07	0.25	0.000	1.000
help	0.66	0.47	0.000	1.000
l1gini_disp	29.72	4.43	22.900	44.000
l1gini_mkt	47.46	5.52	27.700	60.300
l1unempl_m	8.42	3.95	2.547	26.092
l1yunempl_m	18.68	9.22	5.000	55.475
l1lp99p100	0.09	0.03	0.048	0.246
l1p99p100_wealth	0.27	0.07	0.168	0.393
l1GDP_pC_US	33023.70	11210.66	11170.929	69458.883
murder	344.28	674.76	1.000	4879.000
cntry_num	15.75	9.12	1.000	32.000
year	2008.50	3.93	2002.000	2015.000
region_all	21.61	66.60	1.000	423.000
welstate	3.37	1.48	1.000	5.000
essround	4.04	1.93	1.000	7.000

Table A.7: Note: The table presents the summary statistics of all variables used.

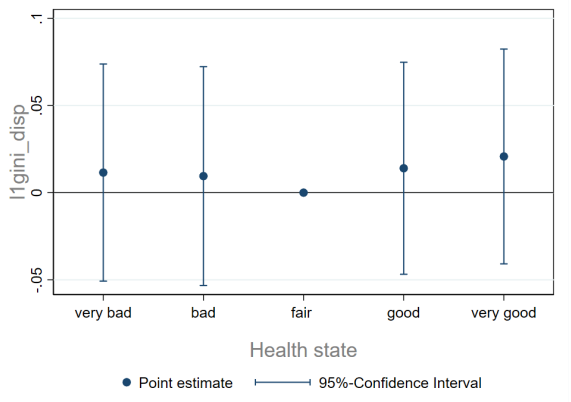
Table A.8: Baseline regression, continuous health and income

	(1) Net Gini			(2) Mkt. Gini			(3) Unempl.			(4) Y. unempl.		
	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p
Income	-0.036***	0.004	0.000	-0.036***	0.004	0.000	-0.036***	0.004	0.000	-0.036***	0.004	0.000
Health	-0.047***	0.007	0.000	-0.046***	0.007	0.000	-0.046***	0.007	0.000	-0.046***	0.007	0.000
L.1 gini_disp	0.019	0.033	0.570									
L.1 gini_mkt				0.042**	0.016	0.013						
L.1 unempl_m							0.007	0.005	0.164			
L.1 yunempl_m										0.005**	0.002	0.011
Year FE	✓			✓			✓			✓		
Country FE	✓			✓			✓			✓		
Region FE	✓			✓			✓			✓		
Add. controls	✓			✓			✓			✓		
r2	0.1534			0.1539			0.1539			0.1541		
N	84252			84252			82810			80883		

Table A.9: Note: The table shows the results estimating equation (1) with continuous health and income variables. The dependent variable is preference for redistribution. The fifth income class and the fair health class serve as the reference category. Additional controls are the martial status, the occupation type, religion and the current main activity, which are included. Data is weighted (design weight). Standard errors are clustered on the country level.*** Significant at the 1 % level.** Significant at the 5 % level.* Significant at the 10 % level.

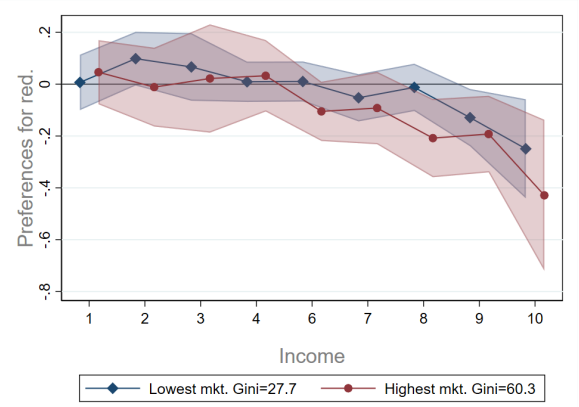


(a) The effect of unemployment at different health levels



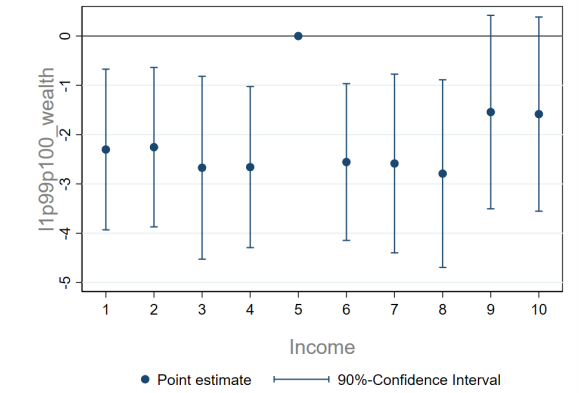
(b) The effect of net Gini at different health levels

Figure 11: Additional health interaction terms. The figure shows additional health interaction terms. Values are calculated using the results of table 4 in which interaction terms are included. Figure 11b shows calculation of the total net Gini effect for different health states levels. Figure 11a presents the effect of youth unemployment at different health states.



Note: The figure shows additional income interaction terms evaluated at highest and lowest unemployment and mkt. Gini levels.

Figure 12: Top 1% wealth and income interaction terms including a trust variable



(a) The effect of Top 1% wealth shares at different income levels when we control for trust

Figure 13: The effect of income at different mkt. Gini levels. Note: Values are calculated using the results of table 5 in which interaction terms are included. Figure **??** shows calculation of the total Top 1% wealth effect for different income levels.

Table A.10: Interaction Helping others and volunteering

	(1)			(2)			(3)			(4)		
	Helping others			Helping others			Volunteering			Volunteering		
	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p
Income 1	0.075*	0.038	0.062	0.021	0.019	0.276	0.024	0.019	0.232	0.014	0.020	0.475
Income 2	0.070***	0.020	0.002	0.052***	0.018	0.007	0.057***	0.018	0.004	0.051**	0.018	0.011
Income 3	0.080***	0.025	0.003	0.046***	0.016	0.007	0.049***	0.016	0.004	0.046***	0.016	0.008
Income 4	0.034	0.024	0.170	0.018	0.017	0.278	0.018	0.017	0.306	0.015	0.019	0.438
Income 6	-0.035	0.026	0.193	-0.035***	0.012	0.010	-0.034**	0.013	0.018	-0.039**	0.015	0.016
Income 7	-0.077***	0.022	0.002	-0.067***	0.017	0.001	-0.067***	0.018	0.001	-0.069***	0.020	0.001
Income 8	-0.125***	0.025	0.000	-0.089***	0.019	0.000	-0.087***	0.020	0.000	-0.095***	0.022	0.000
Income 9	-0.191***	0.021	0.000	-0.152***	0.018	0.000	-0.153***	0.018	0.000	-0.151***	0.018	0.000
Income 10	-0.395***	0.024	0.000	-0.317***	0.029	0.000	-0.318***	0.029	0.000	-0.319***	0.031	0.000
Helping 1	0.159***	0.020	0.000	0.173***	0.012	0.000						
Income 1 × Helping 1	-0.079	0.053	0.143									
Income 2 × Helping 1	-0.026	0.029	0.379									
Income 3 × Helping 1	-0.051*	0.028	0.077									
Income 4 × Helping 1	-0.023	0.025	0.365									
Income 6 × Helping 1	-0.000	0.031	0.990									
Income 7 × Helping 1	0.016	0.023	0.492									
Income 8 × Helping 1	0.056*	0.031	0.080									
Income 9 × Helping 1	0.061***	0.020	0.005									
Income 10 × Helping 1	0.124***	0.029	0.000									
Health 1	0.117**	0.044	0.013	0.230***	0.065	0.001	0.116***	0.039	0.006	0.113**	0.043	0.013
Health 2	0.022	0.018	0.218	0.048	0.031	0.131	0.017	0.018	0.339	0.020	0.017	0.258
Health 4	-0.062***	0.011	0.000	-0.059***	0.018	0.003	-0.064***	0.011	0.000	-0.064***	0.011	0.000
Health 5	-0.102***	0.018	0.000	-0.126***	0.022	0.000	-0.099***	0.018	0.000	-0.099***	0.018	0.000
Health 1 × Helping 1				-0.172**	0.081	0.042						
Health 2 × Helping 1				-0.038	0.030	0.213						
Health 4 × Helping 1				-0.006	0.020	0.781						
Health 5 × Helping 1				0.036*	0.020	0.078						
Volunteering 1							0.014	0.039	0.728	-0.041	0.047	0.386
Health 1 × Volunteering 1							-0.109	0.210	0.608			
Health 2 × Volunteering 1							0.059	0.064	0.369			
Health 4 × Volunteering 1							-0.005	0.039	0.893			
Health 5 × Volunteering 1							-0.006	0.027	0.814			
Income 1 × Volunteering 1										0.152*	0.079	0.064
Income 2 × Volunteering 1										0.101	0.077	0.200
Income 3 × Volunteering 1										0.042	0.042	0.327
Income 4 × Volunteering 1										0.045	0.065	0.495
Income 6 × Volunteering 1										0.082	0.086	0.353
Income 7 × Volunteering 1										0.036	0.076	0.638
Income 8 × Volunteering 1										0.121***	0.042	0.008
Income 9 × Volunteering 1										-0.014	0.060	0.822
Income 10 × Volunteering 1										0.018	0.064	0.787
r2	0.1625			0.1620			0.1557			0.1559		
N	83979			83979			84252			84252		
Year FE	✓			✓			✓			✓		
Country FE	✓			✓			✓			✓		
Region FE	✓			✓			✓			✓		
All controls	✓			✓			✓			✓		

Note: The table presents estimation results interacting "helping others" and "volunteering" with income and health. Data is weighted (design weight). The fifth income class and the fair health class serve as the reference category. All available controls are included with additional controls such as the martial status, the occupation type, religion and the current main activity, which are included. Standard errors are clustered on the country level.*** Significant at the 1 % level.** Significant at the 5 % level.* Significant at the 10 % level.

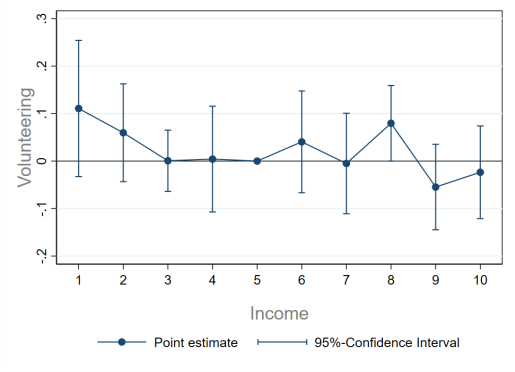
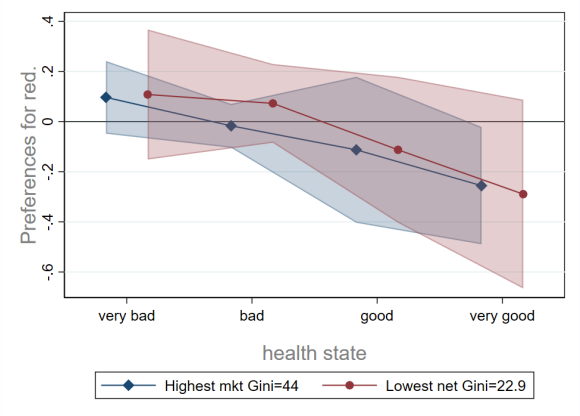


Figure 14: Volunteering and income

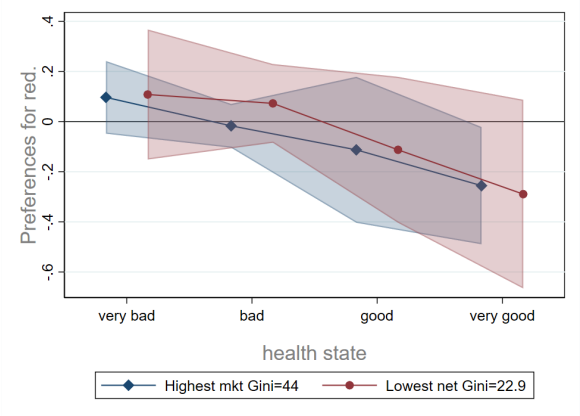
Table A.11: Interaction having children and income

	(1) Having children & income		
	Coef.	*Stdv.*	*p*
Income 1	0.077	0.048	0.122
Income 2	0.107***	0.033	0.003
Income 3	0.083**	0.033	0.016
Income 4	0.077**	0.033	0.026
Income 6	-0.006	0.031	0.848
Income 7	-0.017	0.026	0.514
Income 8	-0.037	0.030	0.230
Income 9	-0.091***	0.025	0.001
Income 10	-0.220***	0.033	0.000
Children	0.117***	0.034	0.002
Income 1 × Children	-0.056	0.055	0.315
Income 2 × Children	-0.056	0.038	0.147
Income 3 × Children	-0.043	0.033	0.208
Income 4 × Children	-0.071**	0.034	0.045
Income 6 × Children	-0.035	0.039	0.367
Income 7 × Children	-0.067*	0.035	0.069
Income 8 × Children	-0.064	0.045	0.167
Income 9 × Children	-0.080*	0.041	0.064
Income 10 × Children	-0.134***	0.040	0.002
r2	0.1531		
N	85474		
Year FE	✓		
Country FE	✓		
Region FE	✓		
All controls	✓		

Note: The table shows the effect of "having children" at different income levels. Data is weighted (design weight). Standard errors are clustered on the country level.*** Significant at the 1 % level. ** Significant at the 5 % level.* Significant at the 10 % level.



(a) The effect of health at net Gini levels



(b) The effect of health at different mkt. Gini levels

Figure 15: Additional health interaction terms evaluated at lowest and highest levels. Note: Values are calculated using the results of table 4 in which interaction terms are included. The shaded areas indicate the 90% pointwise confidence bands and the circles point estimates.

A.2 Robustness analysis

Table A.12: Political variables

	(1)			(2)			(3)			(4)		
	Mkt. Gini			Y. unempl.			Mkt. Gini			Y. unempl.		
	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p
Income 1	0.035*	0.020	0.093	0.039*	0.020	0.064	0.120	0.199	0.553	0.081**	0.033	0.022
Income 2	0.059***	0.018	0.004	0.063***	0.018	0.002	-0.056	0.226	0.807	0.083**	0.039	0.043
Income 3	0.050***	0.015	0.003	0.051***	0.016	0.003	0.006	0.276	0.983	0.083***	0.029	0.009
Income 4	0.022	0.017	0.216	0.030*	0.016	0.075	0.075	0.194	0.702	0.041	0.029	0.177
Income 6	-0.036***	0.012	0.008	-0.032**	0.013	0.016	-0.173	0.161	0.291	-0.063**	0.025	0.018
Income 7	-0.065***	0.016	0.000	-0.063***	0.017	0.001	-0.147	0.192	0.450	-0.107**	0.039	0.010
Income 8	-0.086***	0.019	0.000	-0.080***	0.019	0.000	-0.347*	0.199	0.092	-0.144***	0.051	0.009
Income 9	-0.150***	0.016	0.000	-0.151***	0.017	0.000	-0.189	0.212	0.380	-0.170***	0.044	0.001
Income 10	-0.306***	0.028	0.000	-0.302***	0.029	0.000	-0.493	0.405	0.235	-0.384***	0.066	0.000
Health 1	0.103**	0.043	0.024	0.094**	0.045	0.047						
Health 2	0.018	0.017	0.312	0.011	0.018	0.546						
Health 4	-0.055***	0.011	0.000	-0.056***	0.012	0.000						
Health 5	-0.089***	0.018	0.000	-0.091***	0.018	0.000						
Health							-0.042***	0.007	0.000	-0.043***	0.007	0.000
Trust in legal system	-0.018***	0.003	0.000	-0.018***	0.003	0.000	-0.018***	0.003	0.000	-0.018***	0.003	0.000
Union member, ever	0.097***	0.014	0.000	0.098***	0.014	0.000	0.096***	0.014	0.000	0.097***	0.014	0.000
Union member, cur.	0.073***	0.022	0.003	0.073***	0.023	0.004	0.073***	0.022	0.003	0.073***	0.023	0.003
Volunteering	-0.009	0.022	0.684	0.000	0.023	1.000	-0.009	0.022	0.676	0.000	0.023	0.987
Helping	0.171***	0.009	0.000	0.171***	0.009	0.000	0.171***	0.009	0.000	0.171***	0.009	0.000
L.1 gini_mkt	0.042**	0.016	0.012				0.041**	0.017	0.021			
L.1 yunempl_m				0.005**	0.002	0.014				0.004*	0.002	0.062
Income 1 × L.1 gini_mkt							-0.002	0.004	0.687			
Income 2 × L.1 gini_mkt							0.002	0.005	0.623			
Income 3 × L.1 gini_mkt							0.001	0.006	0.875			
Income 4 × L.1 gini_mkt							-0.001	0.004	0.781			
Income 6 × L.1 gini_mkt							0.003	0.003	0.400			
Income 7 × L.1 gini_mkt							0.002	0.004	0.671			
Income 8 × L.1 gini_mkt							0.005	0.004	0.195			
Income 9 × L.1 gini_mkt							0.001	0.005	0.859			
Income 10 × L.1 gini_mkt							0.004	0.009	0.649			
Income 1 × L.1 yunempl_m										-0.003	0.002	0.288
Income 2 × L.1 yunempl_m										-0.001	0.002	0.613
Income 3 × L.1 yunempl_m										-0.002	0.001	0.196
Income 4 × L.1 yunempl_m										-0.001	0.001	0.639
Income 6 × L.1 yunempl_m										0.002	0.001	0.117
Income 7 × L.1 yunempl_m										0.003	0.002	0.240
Income 8 × L.1 yunempl_m										0.004	0.003	0.160
Income 9 × L.1 yunempl_m										0.001	0.003	0.670
Income 10 × L.1 yunempl_m										0.005	0.004	0.228
r2	0.1670			0.1675			0.1670			0.1677		
N	82746			79606			82746			79606		
Year FE	✓			✓			✓			✓		
Country FE	✓			✓			✓			✓		
Region FE	✓			✓			✓			✓		
All controls	✓			✓			✓			✓		

Note: The table presents robustness tests (1) including political variables. Data is weighted (design weight). Standard errors are clustered on the country level. *** Significant at the 1 % level. ** Significant at the 5 % level.* Significant at the 10 % level.

Table A.13: Survey round FE

	(1) Mkt. Gini			(2) Y. unempl.			(3) Mkt. Gini			(4) Y. unempl.		
	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p
Income 1	0.023	0.019	0.242	0.027	0.019	0.174	0.056	0.188	0.770	0.063*	0.035	0.087
Income 2	0.058***	0.018	0.003	0.062***	0.018	0.002	-0.103	0.222	0.647	0.078*	0.039	0.054
Income 3	0.050***	0.016	0.004	0.051***	0.016	0.005	-0.011	0.304	0.970	0.090***	0.031	0.007
Income 4	0.018	0.018	0.308	0.026	0.016	0.118	0.064	0.192	0.740	0.039	0.029	0.189
Income 6	-0.033**	0.013	0.018	-0.032**	0.014	0.031	-0.205	0.165	0.227	-0.068**	0.028	0.020
Income 7	-0.067***	0.017	0.001	-0.064***	0.018	0.002	-0.123	0.201	0.546	-0.110**	0.040	0.010
Income 8	-0.087***	0.020	0.000	-0.082***	0.020	0.000	-0.371*	0.215	0.096	-0.147**	0.055	0.012
Income 9	-0.153***	0.017	0.000	-0.153***	0.018	0.000	-0.243	0.224	0.286	-0.187***	0.047	0.000
Income 10	-0.318***	0.029	0.000	-0.315***	0.029	0.000	-0.586	0.421	0.175	-0.400***	0.068	0.000
Health 1	0.109**	0.042	0.016	0.105**	0.046	0.030						
Health 2	0.019	0.018	0.288	0.010	0.018	0.570						
Health 4	-0.064***	0.011	0.000	-0.066***	0.011	0.000						
Health 5	-0.099***	0.018	0.000	-0.102***	0.018	0.000						
Health							-0.047***	0.007	0.000	-0.048***	0.007	0.000
L.1 gini_mkt	0.046**	0.018	0.015				0.044**	0.019	0.027			
L.1 yunempl_m				0.005**	0.002	0.021				0.004*	0.002	0.098
Income 1 × L.1 gini_mkt							-0.001	0.004	0.866			
Income 2 × L.1 gini_mkt							0.003	0.005	0.480			
Income 3 × L.1 gini_mkt							0.001	0.006	0.842			
Income 4 × L.1 gini_mkt							-0.001	0.004	0.808			
Income 6 × L.1 gini_mkt							0.004	0.003	0.314			
Income 7 × L.1 gini_mkt							0.001	0.004	0.786			
Income 8 × L.1 gini_mkt							0.006	0.004	0.192			
Income 9 × L.1 gini_mkt							0.002	0.005	0.699			
Income 10 × L.1 gini_mkt							0.006	0.009	0.531			
Income 1 × L.1 yunempl_m										-0.002	0.003	0.389
Income 2 × L.1 yunempl_m										-0.001	0.002	0.679
Income 3 × L.1 yunempl_m										-0.002	0.001	0.118
Income 4 × L.1 yunempl_m										-0.001	0.001	0.584
Income 6 × L.1 yunempl_m										0.002*	0.001	0.086
Income 7 × L.1 yunempl_m										0.003	0.002	0.235
Income 8 × L.1 yunempl_m										0.004	0.003	0.179
Income 9 × L.1 yunempl_m										0.002	0.003	0.471
Income 10 × L.1 yunempl_m										0.005	0.004	0.227
r2	0.1558			0.1559			0.1558			0.1561		
N	84252			80883			84252			80883		
Survey FE	✓			✓			✓			✓		
Country FE	✓			✓			✓			✓		
Region FE	✓			✓			✓			✓		
All controls	✓			✓			✓			✓		

Note: The table presents robustness tests (2) including survey round FE. Data is weighted (design weight). Standard errors are clustered on the country level. *** Significant at the 1 % level. ** Significant at the 5 % level.* Significant at the 10 % level.

Table A.14: Ordered Probit model

	(1)			(2)			(3)			(4)		
	Mkt. Gini			Y. unempl.			Mkt. Gini			Y. unempl.		
	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p
Income 1	0.031	0.024	0.204	0.035	0.024	0.158	0.184	0.232	0.428	0.067	0.045	0.142
Income 2	0.066***	0.021	0.002	0.071***	0.021	0.001	-0.109	0.244	0.653	0.069	0.042	0.106
Income 3	0.054***	0.019	0.004	0.054***	0.019	0.005	0.027	0.369	0.941	0.083***	0.032	0.009
Income 4	0.015	0.019	0.448	0.023	0.018	0.209	0.093	0.199	0.641	0.036	0.029	0.216
Income 6	-0.039***	0.015	0.008	-0.038**	0.016	0.014	-0.289	0.202	0.153	-0.074***	0.029	0.010
Income 7	-0.076***	0.018	0.000	-0.072***	0.019	0.000	-0.120	0.226	0.595	-0.113***	0.038	0.003
Income 8	-0.096***	0.020	0.000	-0.090***	0.021	0.000	-0.376*	0.224	0.093	-0.139***	0.050	0.006
Income 9	-0.165***	0.018	0.000	-0.165***	0.019	0.000	-0.243	0.236	0.303	-0.176***	0.041	0.000
Income 10	-0.325***	0.030	0.000	-0.320***	0.030	0.000	-0.452	0.414	0.275	-0.361***	0.061	0.000
Health 1	0.171***	0.049	0.000	0.167***	0.053	0.002						
Health 2	0.038*	0.022	0.089	0.025	0.022	0.248						
Health 4	-0.081***	0.012	0.000	-0.083***	0.012	0.000						
Health 5	-0.103***	0.019	0.000	-0.108***	0.019	0.000						
Health							-0.055***	0.007	0.000	-0.055***	0.008	0.000
L.1 gini_mkt	0.049***	0.018	0.007				0.047**	0.019	0.014			
L.1 yunempl_m				0.006***	0.002	0.006				0.006**	0.003	0.028
Income 1 × L.1 gini_mkt							-0.003	0.005	0.530			
Income 2 × L.1 gini_mkt							0.004	0.005	0.472			
Income 3 × L.1 gini_mkt							0.001	0.008	0.942			
Income 4 × L.1 gini_mkt							-0.002	0.004	0.689			
Income 6 × L.1 gini_mkt							0.005	0.004	0.220			
Income 7 × L.1 gini_mkt							0.001	0.005	0.847			
Income 8 × L.1 gini_mkt							0.006	0.005	0.205			
Income 9 × L.1 gini_mkt							0.002	0.005	0.741			
Income 10 × L.1 gini_mkt							0.003	0.009	0.754			
Income 1 × L.1 yunempl_m										-0.002	0.003	0.574
Income 2 × L.1 yunempl_m										0.000	0.003	0.941
Income 3 × L.1 yunempl_m										-0.002	0.002	0.296
Income 4 × L.1 yunempl_m										-0.001	0.002	0.598
Income 6 × L.1 yunempl_m										0.002	0.001	0.128
Income 7 × L.1 yunempl_m										0.003	0.002	0.249
Income 8 × L.1 yunempl_m										0.003	0.003	0.263
Income 9 × L.1 yunempl_m										0.001	0.002	0.771
Income 10 × L.1 yunempl_m										0.003	0.004	0.474
cut1	2.025**	0.863	0.019	-0.192	0.231	0.404	1.777*	0.915	0.052	-0.356	0.236	0.132
cut2	3.037***	0.880	0.001	0.824***	0.212	0.000	2.789***	0.931	0.003	0.661***	0.216	0.002
cut3	3.570***	0.882	0.000	1.352***	0.209	0.000	3.322***	0.933	0.000	1.189***	0.212	0.000
cut4	4.839***	0.893	0.000	2.634***	0.206	0.000	4.591***	0.942	0.000	2.471***	0.208	0.000
N	84252			80883			84252			80883		
Year FE	✓			✓			✓			✓		
Country FE	✓			✓			✓			✓		
Region FE	✓			✓			✓			✓		
All controls	✓			✓			✓			✓		

Note: The table presents robustness test (3) using a Ordered Probit model. Data is weighted (design weight). Standard errors are clustered on the country level. *** Significant at the 1 % level. ** Significant at the 5 % level.* Significant at the 10 % level.

Table A.15: Three year lags

	(1)			(2)			(3)			(4)		
	Mkt. Gini			Y. unempl.			Mkt. Gini			Y. unempl.		
	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p
Income 1	0.035*	0.020	0.093	0.039*	0.020	0.064	0.109	0.199	0.588	0.082**	0.035	0.028
Income 2	0.059***	0.018	0.004	0.063***	0.018	0.002	-0.056	0.226	0.806	0.084**	0.039	0.039
Income 3	0.049***	0.015	0.003	0.051***	0.016	0.003	0.001	0.276	0.997	0.079**	0.029	0.012
Income 4	0.022	0.017	0.217	0.030*	0.016	0.075	0.070	0.192	0.717	0.045	0.029	0.140
Income 6	-0.036***	0.012	0.008	-0.032**	0.012	0.016	-0.177	0.158	0.272	-0.065**	0.025	0.015
Income 7	-0.065***	0.016	0.000	-0.063***	0.017	0.001	-0.154	0.191	0.428	-0.107***	0.039	0.010
Income 8	-0.086***	0.019	0.000	-0.081***	0.019	0.000	-0.352*	0.197	0.085	-0.145***	0.052	0.009
Income 9	-0.150***	0.016	0.000	-0.151***	0.017	0.000	-0.197	0.213	0.364	-0.179***	0.045	0.001
Income 10	-0.306***	0.028	0.000	-0.302***	0.029	0.000	-0.490	0.408	0.240	-0.386***	0.066	0.000
Health 1	0.103**	0.043	0.023	0.094**	0.045	0.047						
Health 2	0.018	0.017	0.304	0.011	0.018	0.547						
Health 4	-0.055***	0.011	0.000	-0.056***	0.012	0.000						
Health 5	-0.089***	0.018	0.000	-0.091***	0.018	0.000						
Health							-0.042***	0.007	0.000	-0.043***	0.007	0.000
L.3 gini_mkt	0.041**	0.016	0.014				0.040**	0.017	0.025			
L.3 yunempl_m				0.005**	0.002	0.021				0.004*	0.002	0.092
Income 1 × L.3 gini_mkt							-0.002	0.004	0.724			
Income 2 × L.3 gini_mkt							0.002	0.005	0.621			
Income 3 × L.3 gini_mkt							0.001	0.006	0.862			
Income 4 × L.3 gini_mkt							-0.001	0.004	0.798			
Income 6 × L.3 gini_mkt							0.003	0.003	0.378			
Income 7 × L.3 gini_mkt							0.002	0.004	0.644			
Income 8 × L.3 gini_mkt							0.006	0.004	0.182			
Income 9 × L.3 gini_mkt							0.001	0.005	0.832			
Income 10 × L.3 gini_mkt							0.004	0.009	0.656			
Income 1 × L.3 yunempl_m										-0.003	0.002	0.291
Income 2 × L.3 yunempl_m										-0.001	0.002	0.586
Income 3 × L.3 yunempl_m										-0.002	0.001	0.253
Income 4 × L.3 yunempl_m										-0.001	0.001	0.521
Income 6 × L.3 yunempl_m										0.002	0.001	0.112
Income 7 × L.3 yunempl_m										0.003	0.002	0.243
Income 8 × L.3 yunempl_m										0.004	0.003	0.163
Income 9 × L.3 yunempl_m										0.002	0.003	0.553
Income 10 × L.3 yunempl_m										0.005	0.004	0.216
r2	0.1670			0.1674			0.1670			0.1677		
N	82744			79602			82744			79602		
Year FE	✓			✓			✓			✓		
Country FE	✓			✓			✓			✓		
Region FE	✓			✓			✓			✓		
All controls	✓			✓			✓			✓		

Note: The table presents robustness tests (4) including three year lags. Data is weighted (design weight). Standard errors are clustered on the country level. *** Significant at the 1 % level. ** Significant at the 5 % level.* Significant at the 10 % level.

Table A.16: Four year lags

	(1)			(2)			(3)			(4)		
	Mkt. Gini			Y. unempl.			Mkt. Gini			Y. unempl.		
	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p
Income1	0.035*	0.020	0.093	0.039*	0.020	0.063	0.114	0.197	0.567	0.083**	0.035	0.027
Income2	0.059***	0.018	0.004	0.063***	0.018	0.002	-0.055	0.228	0.809	0.080**	0.039	0.048
Income3	0.050***	0.015	0.003	0.051***	0.016	0.003	0.010	0.277	0.971	0.079**	0.030	0.014
Income4	0.022	0.017	0.216	0.030*	0.016	0.074	0.066	0.192	0.734	0.032	0.029	0.284
Income6	-0.036***	0.012	0.008	-0.032**	0.012	0.016	-0.172	0.158	0.285	-0.068**	0.025	0.011
Income7	-0.065***	0.016	0.000	-0.063***	0.017	0.001	-0.163	0.191	0.401	-0.113***	0.038	0.006
Income8	-0.086***	0.019	0.000	-0.081***	0.019	0.000	-0.354*	0.198	0.085	-0.150***	0.050	0.006
Income9	-0.150***	0.016	0.000	-0.151***	0.017	0.000	-0.188	0.215	0.390	-0.175***	0.044	0.000
Income10	-0.306***	0.028	0.000	-0.302***	0.029	0.000	-0.493	0.407	0.236	-0.385***	0.065	0.000
Health1	0.103**	0.043	0.023	0.094**	0.045	0.047						
Health2	0.018	0.017	0.303	0.011	0.018	0.549						
Health4	-0.055***	0.011	0.000	-0.056***	0.012	0.000						
Health5	-0.089***	0.018	0.000	-0.091***	0.018	0.000						
Health							-0.042***	0.007	0.000	-0.043***	0.007	0.000
L.4 gini_mkt	0.041**	0.015	0.014				0.039**	0.016	0.025			
L.4 yunempl_m				0.005**	0.002	0.025				0.003	0.002	0.130
Income1 × L.4 gini_mkt							-0.002	0.004	0.703			
Income2 × L.4 gini_mkt							0.002	0.005	0.626			
Income3 × L.4 gini_mkt							0.001	0.006	0.887			
Income4 × L.4 gini_mkt							-0.001	0.004	0.816			
Income6 × L.4 gini_mkt							0.003	0.003	0.395			
Income7 × L.4 gini_mkt							0.002	0.004	0.611			
Income8 × L.4 gini_mkt							0.006	0.004	0.182			
Income9 × L.4 gini_mkt							0.001	0.005	0.866			
Income10 × L.4 gini_mkt							0.004	0.009	0.650			
Income1 × L.4 yunempl_m										-0.003	0.002	0.292
Income2 × L.4 yunempl_m										-0.001	0.002	0.656
Income3 × L.4 yunempl_m										-0.002	0.002	0.271
Income4 × L.4 yunempl_m										-0.000	0.001	0.918
Income6 × L.4 yunempl_m										0.002*	0.001	0.071
Income7 × L.4 yunempl_m										0.003	0.002	0.181
Income8 × L.4 yunempl_m										0.004	0.003	0.124
Income9 × L.4 yunempl_m										0.001	0.003	0.591
Income10 × L.4 yunempl_m										0.005	0.004	0.219
r2	0.1670			0.1674			0.1670			0.1677		
N	82744			79603			82744			79603		
r2	0.1670			0.1674			0.1670			0.1677		
N	82744			79602			82744			79602		
Year FE	✓			✓			✓			✓		
Country FE	✓			✓			✓			✓		
Region FE	✓			✓			✓			✓		
All controls	✓			✓			✓			✓		

Note: The table presents robustness tests (4) including three year lags. Data is weighted (design weight). Standard errors are clustered on the country level. *** Significant at the 1 % level. ** Significant at the 5 % level.* Significant at the 10 % level.

Table A.17: Including crime rates

	(1)			(2)			(3)			(4)		
	Mkt. Gini			Y. unempl.			Mkt. Gini			Y. unempl.		
	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p
Income 1	0.061***	0.021	0.007	0.063***	0.021	0.007	0.021	0.349	0.952	0.120***	0.036	0.003
Income 2	0.061***	0.014	0.000	0.063***	0.014	0.000	-0.100	0.353	0.780	0.047	0.044	0.303
Income 3	0.057***	0.015	0.001	0.058***	0.015	0.001	0.455*	0.228	0.058	0.111***	0.037	0.006
Income 4	0.028**	0.011	0.015	0.028**	0.011	0.013	0.025	0.332	0.940	0.051**	0.019	0.014
Income 6	-0.047**	0.018	0.015	-0.047**	0.019	0.018	0.182	0.271	0.508	-0.097**	0.039	0.020
Income 7	-0.091**	0.033	0.012	-0.091**	0.034	0.013	0.731	0.431	0.103	-0.133*	0.072	0.077
Income 8	-0.107***	0.031	0.002	-0.110***	0.032	0.002	0.237	0.452	0.605	-0.179**	0.067	0.013
Income 9	-0.184***	0.036	0.000	-0.187***	0.038	0.000	0.849	0.600	0.171	-0.214**	0.090	0.027
Income 10	-0.338***	0.038	0.000	-0.343***	0.039	0.000	1.029	0.866	0.247	-0.364***	0.056	0.000
Health 1	0.182***	0.053	0.002	0.186***	0.053	0.002						
Health 2	0.013	0.016	0.442	0.013	0.016	0.421						
Health 4	-0.067***	0.014	0.000	-0.067***	0.014	0.000						
Health 5	-0.106***	0.010	0.000	-0.106***	0.009	0.000						
Health							-0.052***	0.006	0.000	-0.053***	0.006	0.000
murder	0.000**	0.000	0.013	0.000***	0.000	0.000	0.000**	0.000	0.019	0.000***	0.000	0.000
L.1 gini_mkt	0.060***	0.016	0.001				0.068***	0.018	0.001			
L.1 yunempl_m				0.007**	0.003	0.017				0.006**	0.003	0.033
Income 1 × L.1 gini_mkt							0.001	0.007	0.909			
Income 2 × L.1 gini_mkt							0.003	0.007	0.652			
Income 3 × L.1 gini_mkt							-0.008*	0.005	0.087			
Income 4 × L.1 gini_mkt							0.000	0.007	0.996			
Income 6 × L.1 gini_mkt							-0.005	0.006	0.417			
Income 7 × L.1 gini_mkt							-0.017*	0.009	0.074			
Income 8 × L.1 gini_mkt							-0.007	0.009	0.462			
Income 9 × L.1 gini_mkt							-0.021	0.012	0.102			
Income 10 × L.1 gini_mkt							-0.028	0.018	0.122			
Income 1 × L.1 yunempl_m										-0.003	0.002	0.188
Income 2 × L.1 yunempl_m										0.001	0.002	0.688
Income 3 × L.1 yunempl_m										-0.003*	0.002	0.092
Income 4 × L.1 yunempl_m										-0.001	0.001	0.250
Income 6 × L.1 yunempl_m										0.003*	0.002	0.091
Income 7 × L.1 yunempl_m										0.002	0.003	0.422
Income 8 × L.1 yunempl_m										0.004	0.003	0.191
Income 9 × L.1 yunempl_m										0.001	0.004	0.720
Income 10 × L.1 yunempl_m										0.001	0.003	0.705
r2	0.1568			0.1561			0.1573			0.1562		
N	70424			70423			70424			70423		
Year FE	✓			✓			✓			✓		
Country FE	✓			✓			✓			✓		
Region FE	✓			✓			✓			✓		
All controls	✓			✓			✓			✓		

Note: The table presents robustness tests (4) including a variable capturing international homicides. Data is weighted (design weight). Standard errors are clustered on the country level. *** Significant at the 1 % level. ** Significant at the 5 % level.* Significant at the 10 % level.

Table A.18: Welfare state classification

	(1)			(2)			(3)			(4)		
	Mkt. Gini			Y. unempl.			Mkt. Gini			Y. unempl.		
	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p	Coef.	Stdv.	p
Welfare state (ref.: Southern)												
Nordic	0.331**	0.123	0.012	0.109	0.117	0.358	0.333**	0.122	0.011	0.115	0.116	0.331
Liberal	0.041	0.162	0.802	0.413***	0.143	0.007	0.045	0.165	0.786	0.423***	0.141	0.006
Continental	0.172***	0.046	0.001	0.207***	0.048	0.000	0.174***	0.046	0.001	0.210***	0.049	0.000
Eastern and Central	0.665***	0.128	0.000	0.529***	0.144	0.001	0.664***	0.127	0.000	0.541***	0.144	0.001
Income 1	0.023	0.019	0.243	0.026	0.019	0.179	0.080	0.190	0.678	0.063*	0.036	0.087
Income 2	0.057***	0.018	0.004	0.061***	0.018	0.002	-0.105	0.220	0.638	0.076*	0.038	0.058
Income 3	0.049***	0.016	0.004	0.050***	0.016	0.004	-0.016	0.300	0.958	0.089***	0.030	0.006
Income 4	0.018	0.017	0.310	0.026	0.016	0.116	0.052	0.190	0.786	0.038	0.029	0.201
Income 6	-0.034**	0.013	0.016	-0.032**	0.014	0.028	-0.203	0.165	0.229	-0.068**	0.028	0.022
Income 7	-0.068***	0.017	0.001	-0.064***	0.018	0.002	-0.126	0.199	0.533	-0.108**	0.039	0.011
Income 8	-0.087***	0.019	0.000	-0.082***	0.020	0.000	-0.374*	0.211	0.087	-0.145**	0.054	0.012
Income 9	-0.153***	0.017	0.000	-0.153***	0.018	0.000	-0.246	0.219	0.272	-0.185***	0.046	0.000
Income 10	-0.318***	0.028	0.000	-0.315***	0.029	0.000	-0.581	0.420	0.178	-0.397***	0.067	0.000
Health 1	0.109**	0.042	0.016	0.105**	0.046	0.030	0.109**	0.042	0.015	0.109**	0.045	0.024
Health 2	0.019	0.017	0.272	0.011	0.018	0.549	0.020	0.017	0.263	0.013	0.018	0.474
Health 4	-0.064***	0.011	0.000	-0.066***	0.011	0.000	-0.065***	0.011	0.000	-0.067***	0.011	0.000
Health 5	-0.099***	0.018	0.000	-0.102***	0.018	0.000	-0.099***	0.018	0.000	-0.102***	0.018	0.000
L.1 gini_mkt	0.041**	0.016	0.013				0.039**	0.017	0.026			
L.1 yunempl_m				0.005***	0.002	0.010				0.004*	0.002	0.057
Income 1 × L.1 gini_mkt							-0.001	0.004	0.774			
Income 2 × L.1 gini_mkt							0.003	0.005	0.474			
Income 3 × L.1 gini_mkt							0.001	0.006	0.829			
Income 4 × L.1 gini_mkt							-0.001	0.004	0.856			
Income 6 × L.1 gini_mkt							0.004	0.003	0.317			
Income 7 × L.1 gini_mkt							0.001	0.004	0.772			
Income 8 × L.1 gini_mkt							0.006	0.004	0.179			
Income 9 × L.1 gini_mkt							0.002	0.005	0.683			
Income 10 × L.1 gini_mkt							0.006	0.009	0.538			
Income 1 × L.1 yunempl_m										-0.002	0.003	0.380
Income 2 × L.1 yunempl_m										-0.001	0.002	0.688
Income 3 × L.1 yunempl_m										-0.002	0.001	0.118
Income 4 × L.1 yunempl_m										-0.001	0.001	0.609
Income 6 × L.1 yunempl_m										0.002*	0.001	0.094
Income 7 × L.1 yunempl_m										0.003	0.002	0.246
Income 8 × L.1 yunempl_m										0.004	0.003	0.187
Income 9 × L.1 yunempl_m										0.002	0.003	0.483
Income 10 × L.1 yunempl_m										0.005	0.004	0.239
r2	0.1562			0.1565			0.1563			0.1568		
N	84252			80883			84252			80883		
Year FE	✓			✓			✓			✓		
Country FE	✓			✓			✓			✓		
Region FE	✓			✓			✓			✓		
All controls	✓			✓			✓			✓		

Note: The table presents robustness tests (5) including a variable capturing welfare state classification. Data is weighted (design weight). Standard errors are clustered on the country level. *** Significant at the 1 % level. ** Significant at the 5 % level.* Significant at the 10 % level.